



Tropacocaine Injections for Producing Local Anesthesia in Dental Operations.

By ZAHNARZT HANS ALBRECHT,

(Director of the Royal Dental University Institute, Marburg, Prussia).

It is one of the most ardent wishes of our patients that dental operations should be painless for them also, hence the constant search for the ideal anesthetic. This can, however, only be found with certainty among the locally acting remedies, which does not, however, imply that dental narcosis can be rendered unavoidable. There are enough timid patients whom we cannot bring to have any faith in the efficacy of an injected fluid, even by the most plausible assurances. The mobility of such patients must be suspended by complete anesthesia.

The elimination of the nervous conductivity is desired, not only by the patients, but also by dentists, in the excision of a tooth, when operating on a tooth with diseased pulp or affected pericementum, in operations of the maxilla, gums and alveoli, and above all, during extractions. Painless is the watchword!

We will here only consider the second class of those just named, without reference to the liquids, paints, cold mixtures, cataphoresis and the general narcotics, but confine ourselves here to the injection anesthetics, particularly tropacocaine.

The first, and for a long time the only anesthetic used subdermatically or subgingivally, was cocaine, discovered by Keller in 1884, and used in ophthalmology. The hydrochlorate of this alkaloid soon also enjoyed an extended application in other branches of surgery. Even though in time rivals to it appeared, yet it always serves as a point of comparison with which to note the advantages or disadvantages of the new comer.

Cocaine has unquestionably excellent sedative, even analgesic properties, but just as unquestionable are its innumerable toxic effects. The

dose of 0.05 grm. (five-sixth grns. has been fixed upon as being the maximum, but even though strict adherence to this dose was paid, toxic effects could not be avoided. The smallest toxic dose was fixed as being 0.01 grm. (one-sixth grn.). Injections of 0.03 grm. (one-half grn.) have in dental practice also, caused very dangerous symptoms.* I shall not, however, take up your time with jeremiads regarding intoxications from cocaine. You all know too well the well known facts. I am besides, to some extent, convinced that the percentage of intoxications during the moderate exhibition is not nearly so great as is generally assumed.

We must guard against the injection of cocaine in concentrated solutions, even in small doses, because it has been shown by Custer (*J. Custer, Jr., Die Vermerbarkeit des Tropä-cocains in der Infiltrations-anaesthie. Separatabdr.-Munchmed-Wochenschrift, 1898, No. 32*) that it is less due to the absolute quantity by weight, than to the concentration of the injected cocaine solution. Besides this, the impurities must also be considered. Cocaine solutions decompose comparatively rapidly, and are but with difficulty sterilized. E. Merck has demonstrated that a partial decomposition takes place on boiling cocaine solution for fifteen minutes. (*E. Merck Darmstadt. Bericht über das Jahr, 1898, S. 24*). It must also be observed that according to the physiological investigations, carried out with chemically pure cocaine, the cause of the toxic effects are to be sought for in the cocaine itself. (See *Oesser.-ung-Vorschrift 1896, S. 196*).

For several years I used sterilized solutions of 0.05 grm. (five-sixth grn.) of cocaine in one grn. (15 min.) water, a five per cent solution, hence, preserved in sealed glass tubes. This solution I tried on myself. Regarding toxic symptoms in my own case I can state nothing, but there were severe after pains, which persisted for two days, and there was also delayed healing and uncontrollable hemorrhage. With the anesthetic effect of the solution, of which, in most cases, only one-half to one-third of a Pravaz syringeful was injected labially and lingually into the gums, I, as well as my patients, was satisfied. The three above cited disagreeable after effects were, however, very decidedly unpleasant.

So far as the technique of the injection is concerned, it naturally demands a clean syringe and an aseptic canula as requisites. The spot to be operated on is washed with hydrogen peroxide and alcohol, then the needle is carefully introduced, a drop of the solution having previously been forced to the point before insertion. The canula should reach from the neck of the tooth as nearly as possible to the root.

*Niemeyer, Heinrich, Schmere Intoxikationserscheinungen nach der subgingivalen Injektion von 0.03 grn. Cocainum hydrochloricum. Deutsche Monatschrift f. Z., 1899, S. 193.

Eucaine.

No advantages over cocaine could be found for eucaine, which has been recently much spoken of, and introduced with much advertising. As I have already stated in the conclusions in my "Review of the Year 1896" (see *Odontolog. Blätter*, II., No. 14), the positive fact remains paramount that, in spite of all controversy, it has not yet been possible to prevent the subsequent swelling of the cheek and the painfulness of the injection. The anesthetic power of both eucaines, A and B, is said to be decidedly inferior to that of cocaine. (*Rogman. Ueber den Wert der lokalen Anesthetiker in der Augenheilkunde Cocaine, Eucaine, Holocaine and Tropacocaine, Separatabdr. us der Ophthalmolog. Klinck, 1897, Nos. 2 and 3.*) Notwithstanding this, stronger than a five per cent solution must not be employed, according to Dzierzawski; and eucaine is certainly not harmless. Has not E. Florke, of Bremen (see *D. M. f. Z. 1897, S. 252*), given details of two anxious hours caused him by a serious case of eucaine poisoning occurring in his practice?

Nirvanin.

Nirvanin, which is intended as a soluble succedaneum for the difficultly soluble orthoform in subdermatic injections, is still too little known to enable a judgment to be passed on its action. For producing deep seated anesthesia of the mucosa, it is said not to compare with cocaine, nor with tropacocaine. (See Merck's Bericht, p. 99.)

Tropacocaine.

Tropacocaine was tried three years ago by Ludwig Hattyassy (*Hattyassy, Ludwig. Versuche mit Tropacocaine. Oester. '96, S. 161*) in the dental clinic of Prof. Arkovy, of Budapest. He was led to use it by an essay published by Vamossy (*Referat. Oester. '96, S. 195*) regarding the dangerousness of cocaine, and the employment of tropacocaine as a substitute for cocaine. The conclusions drawn by Hattyassy were but little encouraging. His results were embodied as follows: "Those who are friendly disposed toward local anesthesia will, it seems, find in tropacocaine a less dangerous agent than cocaine, although it has the disadvantage that a less positive action must be expected than is the case when cocaine is used; at all events, the individuality of the patient has a decided bearing on the sensitiveness toward pain."

Should I have thus even believed that tropacocaine is a substitute for cocaine, I would have considered investigations, in view of this essay, as time wasted, and hence adhered to cocaine.

Some time ago, however, my attention was again drawn to tropacocaine, by the general laudatory reports on its action, written, not by dentists, but by general practitioners. I therefore again read Hattyassy's paper. He injected the remedy, which at the first read-

ing I had not noted, into the tissue just marking the line between the gum and lip or cheek, and as near as possible in the neighborhood of the root tip. At first, a pause of five minutes, later, ten minutes, was observed between the injection and the tooth extraction. With this method I had obtained no success, even with cocaine, and the pause seemed to me to be altogether too long. I bethought myself therefore of obtaining also sterilized solutions of tropacocaine preserved in sealed glass tubes, which was accomplished, thanks to the friendly services of E. Merck, of Darmstadt. First of all, however, a few words regarding tropacocaine may not be superfluous, because the remedy has scarcely been mentioned in recent dental literature.

Tropacocaine is an alkaloid found accompanying cocaine (*von Richter's Chemie der Kohlenstoffverbindungen, etc. Bonn III., S. 613*), obtained, as well known, from the leaves of the Peruvian redwood or coca. The redwoods belong to the group of plants resembling the horse chestnut. Tropacocaine was first obtained by Giesel, in 1891, from the small leaved Japanese coca. It may be split into benzoic acid and pseudotropeine, and Lieberman was successful in producing it synthetically from these substances, in a purer form than it is possible to obtain it from the leaves. Tropacocaine is slightly soluble in water, but its hydrochlorate is much more soluble.

A number of investigators have studied the physiological action of tropacocaine. From the results obtained, I select the following passages as being of the most interest to the dentist:

- Physiological Action of Tropacocaine.**
1. The tropacocaine salt is only one-third as toxic as cocaine hydrochlorate.
 2. Anesthesia develops earlier and persists longer than with cocaine.
 3. Its action on the motor centers and cardiac muscles is far weaker than that of cocaine.
 4. Its solutions are active even after several months, because they are antiseptic.
 5. The addition of sodium chloride removes every irritation from the tropacocaine action.

From exhaustive experiments carried out with rabbits, Custer has fully confirmed the statement made in paragraph 1; and which was already stated almost in the very words by Chadbourne; and even those who have spoken less enthusiastically, have had to indorse this statement. The assurances are certainly conducive to a trial of the remedy in dental practice.

**Method of
Administration.**

In order to carry out clinical tests, I had sterilized solutions, three and five per cent each, prepared for me. In view of the above cited statement that an addition of sodium chloride removes every irritation from the tropacocaine action, six per cent of sodium chloride was added to a portion of each of the solutions. The three per cent solution was found to be not certain enough in its action, and to fail one in an emergency. I hence soon relied entirely on the employment of the five per cent solution and with the sodium chloride addition, because the patients then, during the injection, exhibited scarcely any symptom of sensitiveness, which was not always the case when a solution made without sodium chloride was used. In the beginning my tests were carried out with solutions made in quantities of ten grammes at a time, hence a change from the principle of using the contents of a sealed glass tube, broken just before use.

In the opened, as well as corked vials, a precipitate, consisting of transparent, acicular crystals, was soon formed. This is due, according to Merck, to the precipitation of tropacocaine by the alkaline contents of the glass itself. This precipitate is believed to be of no importance whatever, in respect to the action of the solution. It, besides, in time disappears in the vials which remain unopened. In spite of this, I considered it advisable to employ tropacocaine solutions protected in the manner in which we are wont to protect cocaine.

It is certainly of very little value at the present day to enter with great enthusiasm into the testing of new medicaments. In the present instance, besides, there was no ground for it. It was, however, desirable to state the fact once more, *to find a local anesthetic to be used by injection, which would possess an anesthetic power about equal to that of cocaine, and the application of which should not cause similar pain, or better, not cause any at all. Delay in healing and unpleasant hemorrhages following its use should also be absent.*

For tropacocaine, its established lower toxicity was already a point in its favor. In a trial made upon myself with it, as with cocaine, it was found that in about one minute after the injection, complete anesthesia of the mucosa extending to the alveoli, occurred and persisted for at least ten minutes.

The technique of the operation was again shown to be of great importance. Lingual injections were more readily performed than labial ones, in which latter, the impact against the periosteum was so strong as to bend the needle, and besides, a large portion of the solution would run out into the mouth and be lost. Scratching in the throat and dryness were nevertheless never encountered. Even twenty minutes

after lingual injections, I could still employ the excavator for boring as far as the alveoli without the least trace of pain being felt—the excavator hung from the mouth—and even for hours after the injection, the sensation in the parts was greatly deadened. A certain dizziness, likened by Petsch to that caused, to a mild extent, by champagne, and such as has been observed when cocaine is used, never occurred, but on the other hand there were noted a slight sensation of increased warmth and accelerated cardiac activity, such as follow a swallow of port wine.

We have already touched on the addition of sodium chloride to the solution. So far as the permanency of the tropacocaine solutions are concerned, I would only remark that a three per cent solution, without having been previously sterilized, was kept in an ordinary glass stoppered bottle, and when tested at the end of a year and a half, was found to be absolutely unchanged.

After I had thoroughly tested the tropacocaine in clinical and private practice, I felt bound to relegate cocaine to a secondary place. Even when clinical observations at times apparently showed that the anesthetic power of tropacocaine is slightly less than that of cocaine, yet the other advantages are so pronounced and confirmed when experiments are again made with cocaine, that I believe myself justified in recommending tropacocaine to you.

My colleague, Dr. Dorn, of Saarlouis, who sent me a paper on tropacocaine for the *Odontologische Blätter* after my essay had been prepared, has had the remedy in use for a long time, and is also very satisfied with its action.

I have not yet mentioned, however, what value tropacocaine possesses for anesthesia by the infiltration method, because I have not been impressed with this process in operations on the maxilla; nevertheless, I would say that Custer considers cocaine and tropacocaine as being equal in value as anesthetics for the infiltration method. The tropacocaine possesses also a zone of purely anesthetic power, the lower limit of which is 0.1 per cent. These statements are confirmed by Otto Grunert who carried out investigations on pimples, in his own person, and who has been so kind as to write me the results (13. II. 99). According to Grunert's view, tropacocaine is to be preferred for the Schleich method, because of its lower toxicity.

"In spite of perhaps less (?) anesthetic power, after pains, protracted healing and severe hemorrhages following the injection of tropacocaine injections need never be considered. The not inconsiderable antiseptic action and permanency of the solutions are decided advantages. One minute after a properly carried out injection of a five per cent solution containing six per cent of sodium chloride, extraction may be performed. Toxic effects were not observed."

These are my experiences. Please try the tropacocaine without partiality or prejudice. Experience in the injection technique must, of course, first be gained, should it not have been already acquired, as beginners may readily suffer from non-success, should there be any lack of experience. Impatience, too, is out of place when it concerns subdermatic injections.

Mercuriol as a Dental Antiseptic.

By A. J. WALSH, D.D.S., New York City.

Mercuriol was first brought to my attention by a colleague who had had considerable success with it as an antiseptic in surgery; he praised it very highly and recounted its virtues to me in detail, with so much earnestness, that my interest was aroused and I determined to make a practical test of mercuriol in dental surgery. I can only say that my experience enables me to confirm all that my colleague had said respecting this admirable germicide.

For the benefit of any of my brethren in the profession who may be seeking for more light on the subject of dental antisepsis, I will relate briefly two cases, histories taken at random from my note book.

Chronic alveolar abscess of the upper right
Case 1. cuspid, in a woman about forty years old. This patient had been under treatment for three weeks and despite my best efforts with such agents as mercuric chloride solution, hydrogen dioxide and pyrozone, but little progress had been made toward a cure. At this juncture I began using a solution of mercuriol, one drachm of which was dissolved in three and one-half ounces of warm water. This solution was injected directly into the abscess cavity, through the pulp canal. Decided improvement followed the first injection and a second treatment effected a complete cure of the abscess, so that I was able to fill the pulp canal and the tooth a week after the first treatment with mercuriol.

A young woman came to me with necrosis of
Case 2. the inferior maxilla, caused by an injury, the result of a fall. After removing the lower right cuspid and lateral incisor, pus continued to exude from the alveoli. Upon careful examination I found quite a large piece of necrosed bone to be the source of the difficulty. After several treatments with solutions

of bichloride of mercury (1-5000) and peroxide of hydrogen, I decided to try mercuriol. Thereupon I prepared a solution containing one drachm to three and one-half ounces of hot water, which was carefully injected into the sinus so as to reach every point of the necrosed surface. Two applications retarded the formation of pus to such an extent that I was enabled to make a thorough examination and determine the exact extent of the diseased area. I then decided that it would be necessary to remove the loose bone instead of waiting for exfoliation to occur. The operation was quickly performed and resulted in the separation of a sequestrum one and one-half inches long by three-quarters inch in width. The wound was thoroughly washed with the mercuriol solution and the patient dismissed for the day. Three days later a decided change for the better had taken place, and there was evidence of a tendency on the part of the wound to heal. A few days later the patient was discharged cured.

I believe that mercuriol is the most powerful antiseptic which has come to my hands. It has no cauterant action or even irritating effect, so often noticed with other antiseptics. I can confidently recommend its use to the dental surgeon, as from practical experience I know its worth.

Local Anesthetics, Nirvanin and Orthoform.—Argonin, the New Silver Preparation.

By DR. C. H. BLACKBURN, Urbana, Ill.

Pain, and the alleviation of it, are important factors in the practice of dentistry. Practitioners who have the best interest of the profession at heart, use all possible precautions to alleviate pain, providing this can be done without detriment to the patient or to the work.

Anesthetics, to aid in the painless extraction of teeth, both local and general, are used with success. Probably the local anesthetic cocaine is used more generally than any other, and because of this fact, and likewise of a similarity in administration, I will use it in comparison with nirvanin, the new local anesthetic.

By many operators, in the use of cocaine, utmost precautions have been taken to secure the best results, and these precautions, generally speaking, are to use only fresh solutions; to use distilled water in the preparation of solutions, and to use absolutely clean instruments. Care

should be taken that the solution does not follow the point out into the mouth and be swallowed by the patient, because of the tendency to nauseate. Cocaine used in this way proved a very efficient anesthetic, except in cases of inflammation, but, in spite of precautions, patients at times would complain of faintness, nausea and other symptoms of mild cocaine poisoning. By the use of three to five per cent nirvanin solutions, injected with the same care, this trouble of faintness, etc., is entirely overcome, and the anesthetic value of nirvanin, properly used, is equal to that of cocaine for immediate work and more lasting in effect, allowing the operator to remove roots from the socket, fifteen minutes or even longer without sensation to the patient or without the necessity of a second application of the anesthetic.

Nirvanin is readily soluble in water, non-toxic and anesthetic, one per cent solutions preventing bacterial growth. The writer's experience with nirvanin covering fifty-eight cases recorded, and others of which no record was made, justifies the following:

Nirvanin can be used in cases where cocaine would be dangerous.

Faintness, dizziness, sensation of sickness, etc., are overcome by its use.

It can be used for the extraction of children's teeth without fear of trouble.

No sloughing occurs after its use if precautions of cleanliness are used.

The anesthetic condition produced is of longer duration than that of cocaine.

Five per cent solutions of nirvanin have frequently been used with good results, where, at previous times, two per cent and less of cocaine solutions have caused symptoms of sickness and poisoning. This, surely, is a local anesthetic of inestimable value to the dental surgeon, and deserves a thorough trial.

Eliminating the pain caused by extraction, we will have left many other pains or irritations, which cause the dental surgeon much trouble, and it is to allay many of these that the anesthetic orthoform is used with such remarkable success.

Orthoform.

This non-toxic, odorless, tasteless powder, packed into the sensitive cavity, sealed and allowed to remain from twenty-four to forty-eight hours, will do much toward entirely allaying the sensation so that it may be properly prepared to receive the gold filling. In cases of cavities extending under the gum, a little powdered orthoform will relieve the pain of properly applying the clamp.

Orthoform, used on the gums after salivary or serumal calculus has been removed, will relieve the sensation caused by irritation of the instruments, and in painful pyorrhea pockets, I find a little orthoform will relieve the pain and there will be no recurrence of it for from twelve to thirty-six hours, and many times it will entirely cease, if pockets are well cleaned and teeth properly treated.

Toothache, caused by irritation to an exposed pulp, can be relieved almost instantly by washing out the cavity well and applying orthoform powder. The treatment will relieve the pain entirely for from one to three days, and longer at times. This is a great help when the dentist is called out to give relief, and wishes to control the pain and allow the patient to visit the office.

I have had good success in devitalizing by incorporating orthoform with the arsenic fiber I have used heretofore. After inserting artificial dentures, the patient frequently returns complaining of soreness at different places, caused by the irritation of the plate. By applying powdered orthoform to the sensitive places I have had great success, the patient wearing the plate without inconvenience until the soft tissue had accommodated itself to the denture.

But, probably the most aggravating and unyielding cause of pain is the extraction of a tooth, necessitated by a severe abscess accompanied by swelling. Many remedies have been advocated in these cases, and a great many failures reported in their use. Since I have had orthoform in my possession, I have been able to try its effect on several severe cases, and each case yielded in less than five minutes, generally about two, and there was no recurrence of pain in any case. I packed the cavity with powdered orthoform on cotton and allowed it to remain in each case, except one where the flow of blood was great, and I used glycerine and tannin in connection with the orthoform after about ten minutes, first using orthoform alone.

For any member of the profession to contend that one agent is the panacea for all ills is erroneous, but it can be stated, without fear of contradiction, that the ability to properly diagnose and apply the right agent to the right case is the result of experience with disease and causes of the diseased condition, and also familiarity with the different agents used to counteract the unnatural condition.

Pain, caused by local irritation to nerve terminals, can be allayed by the application of orthoform, and local anesthesia can be produced by the introduction of from three to five per cent solutions of nirvanin hypodermatically under the mucous membrane. The danger of unpleasant symptoms is reduced to the minimum, there being practically no danger in their use in any case.

Argonin. Argonin, the comparatively new silver preparation, can be, and has been used with good effect by dental surgeons, but very little of interest to the profession has appeared in print regarding it. I read the medical reports of the benefit derived from its use in cases of suppuration, especially in purulent ophthalmia, and noticed that it was claimed in these reports that argonin solution proved highly antiseptic, where boric acid was but slightly so; that argonin solution excited a positive and decided effect on suppurative process, while boric acid possessed this power but feebly; and, furthermore, that argonin was readily soluble in warm water, non-irritating and forms no slough on contact with the mucous membrane, needing no neutralizing agent.

Fifteen grains of argonin contain as much silver as one grain of silver nitrate. Procuring a bottle of argonin, I tried its effect upon suppurative diseases in dental practice, and the following illustrations will show its effectiveness.

Case 1. Young lady, about twenty-five years of age; fistulous abscess caused by suppuration in lower left second bicuspid of about one year's standing. Opened into pulp chamber and forced warm water through canal, following this with five per cent solution of argonin. Packed canal with cotton point saturated with oil of cassia, sealed. Three days later, upon examination, I found fistula was practically obliterated and canal in good condition. Packed canal with oil of eucalyptus, and filled in three days without fear of further trouble.

Case 2. Young man, thirty-three years of age, good habits, pyorrhea alveolaris caused in part by irritation to lower central incisors. Copious pus exudation. Cleansed teeth thoroughly by means of instruments and saturated solution of zinc chloride. Ligated teeth securely, holding them firmly in position. Cleansed pus pockets with five per cent solution of argonin, followed by weak trichloroacetic acid. Dismissed patient, and two days later upon examination, found no pus. Treated with alumnol and resorcin, and the third sitting showed a marked improvement.

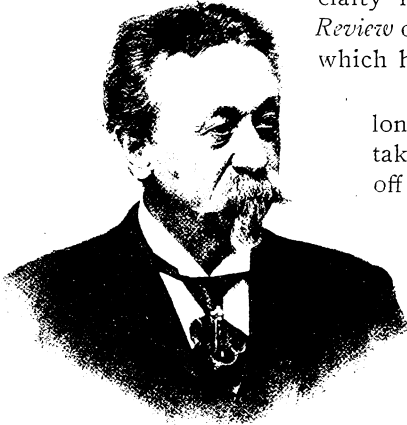
Case 3. Empyema. Lady about forty years of age suffering from empyema on right side, caused by lingual root of superior right first molar. Root extracted, and it was surprising that such an extensive quantity of pus could accumulate in this locality, and its presence be practically unknown to the patient. Drainage procured, and antrum thoroughly cleansed at three sittings, using five per cent first and three per cent solutions of argonin the following times, after which conditions appeared absolutely normal.

Two cases of fistulous abscess of short duration yielded readily after being thoroughly cleansed at the first treatment.

Although my experience with this agent covers no great length of time, I am well satisfied with the results of these few trials, and as it appears to be so satisfactory to the medical profession in suppurative conditions, I believe it a remedy worthy of a trial by every dentist. I have noticed no discoloration caused by its use, which is so great an objection to the use of nitrate of silver solution, and the results obtained seem equally as good.



Dr. Hitchcock's Artistic Carving.



DR. T. S. HITCHCOCK.

In an article by Dr. N. W. Kingsley entitled, "Dentistry not a Specialty in Medicine," published in the *Dental Review* of 1887, occurs the following paragraph, which has since been frequently quoted:

"Wipe out of dentistry everything belonging to mechanics, and you will have taken away all the brains, and cut the head off close to the tail. If all the workers in metals, gold, silver, brass, iron, or steel—if all the workers in wood, carvers, cabinet-makers, and builders—if all the workers in pottery, moulders, porcelain makers, and decorators, together with all the artists, painters, and sculptors, were suddenly and simultaneously destroyed by some strange cataclysm or epidemic, those arts would not be lost;

for in the ranks of the dentists could be found skilled experts in every one of them, and this comprehensive combination of natural faculties and acquirements is not to count against them, for if in the same grand catastrophe all the scientists of certain classes were carried off, the same sciences could be fully taught by dentists."

In a recent issue of *ITEMS OF INTEREST*, in reporting a banquet tendered to Dr. Kingsley, we reproduced some specimens of Dr. Kingsley's work, which showed that in himself the profession possesses a member with conspicuous artistic ability.

In sustaining this idea, that dentistry includes many artists, we take pleasure in introducing to our readers reproductions of some of the beautiful wood carving by Dr. T. S. Hitchcock, of Oswego. It might seem from a peep into the Doctor's laboratory (Fig. 1) that Dr. Hitchcock had abandoned dentistry for carving, but in a letter from him, touching on this subject, he says: "You and others may think that I do little else but carving, but when one realizes that I have been twenty years doing this work, after all it is not much. I do not neglect my business one hour. I always have something to pick up if I have only half an hour to spare. I was nearly a year at work on "The Judgment of Paris," and about the same time on the "Buffalos and Indians." The horn carving

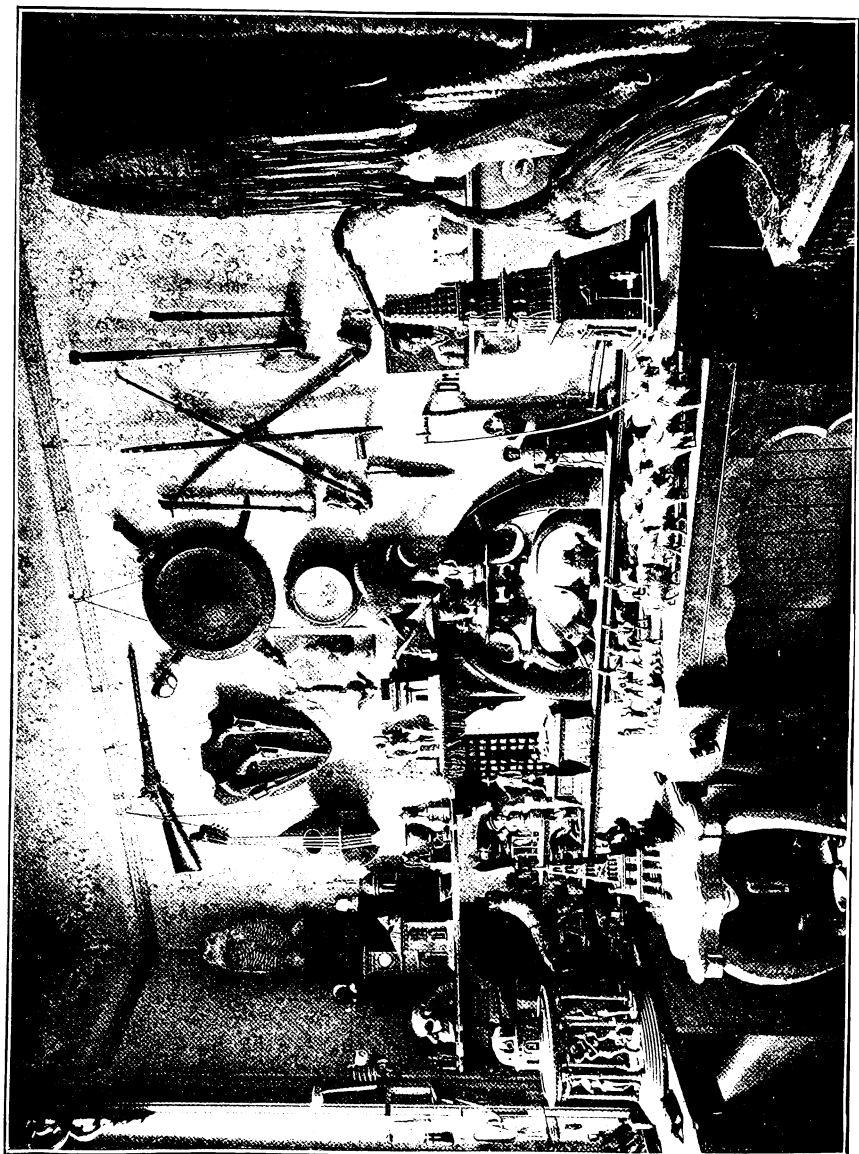


Fig. 1.—LABORATORY OF DR. HITCHCOCK, SHOWING WOOD CARVINGS.

is slow work, though I do much of it with my dental engine. It would require a magnifying glass to see the work on some of the horns. Almost all of the work which you can see in my laboratory picture is my own. Under the table is a statuette of Roscoe Conklin. On the right hand,

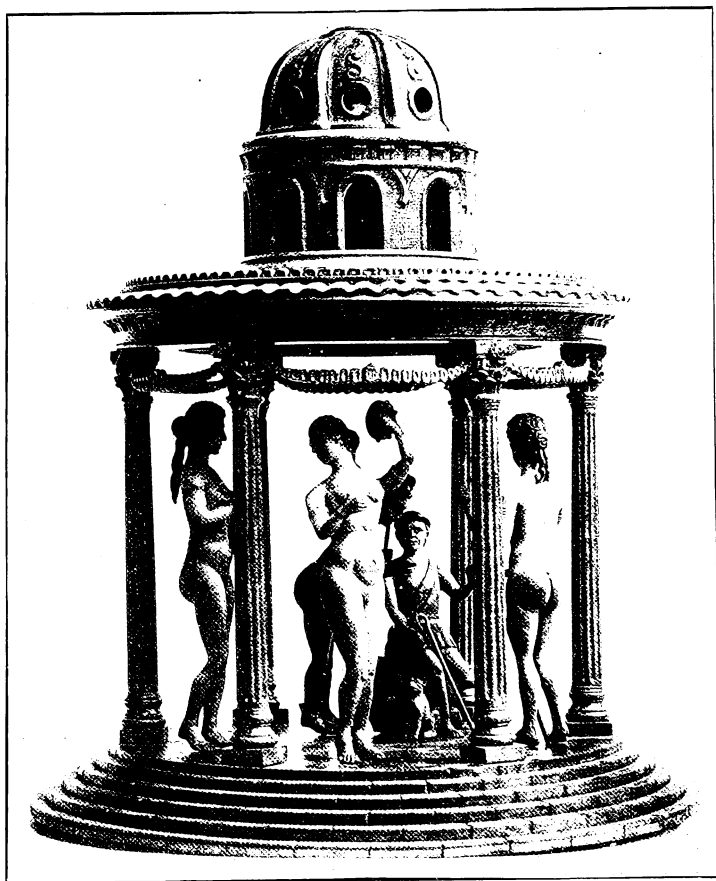


Fig. 2.

standing on my lathe, is my design for a war monument. You will notice a copy of Ada Rehan, the Columbian silver woman, "The Monk and the Devil," etc. Doing this work makes me very strong in my arms and wrists. I have also learned to work with my left hand. I can fill teeth

or extract with my left hand. If it could be taught in our colleges it would be of immense advantage in after years, this use of the left hand."

In a postscript the Doctor gives this interesting information about himself: "It has been forty years since I began the practice of dentistry, but I have not begun to grow old nor my hair to turn gray. I retire at ten o'clock all the year round, and rise at seven in the winter and six in the summer, and have done so all my life." Verily a good recipe to

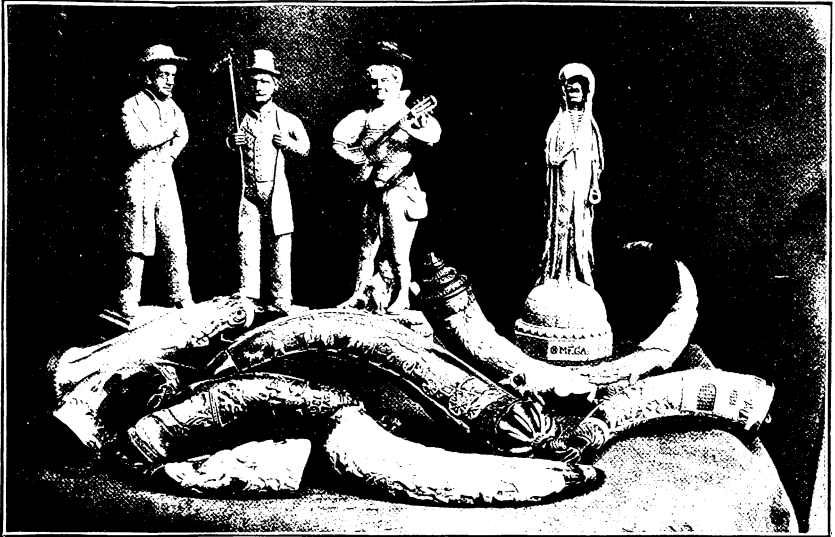


Fig. 3.

younger men who desire to achieve something in their profession and live to ripe old age.

The Doctor must not be accused of attempting to advertise himself, as these photographs have been furnished for illustration of this article only after repeated solicitation, and, with the article, are intended to serve as an inspiration to our younger members to be artist dentists, instead of using their profession merely to acquire money. There are twenty-five thousand people in Oswego, yet only a few of the Doctor's intimate friends and patients know anything of the beautiful work which he has done. Only four of the twelve dentists in the town have seen the specimens. The Doctor's aim has been to carry out the idea to which he holds, that it is the duty of everyone "to leave some record, some foot-

prints along the highway of this work-a-day world, that others coming after may know that we have lived. It is our duty to throw at least one plank across some dark chasm of doubt that others may walk safely over, and to leave some light, though it be feeble and twinkling, in the outer porch of fame."

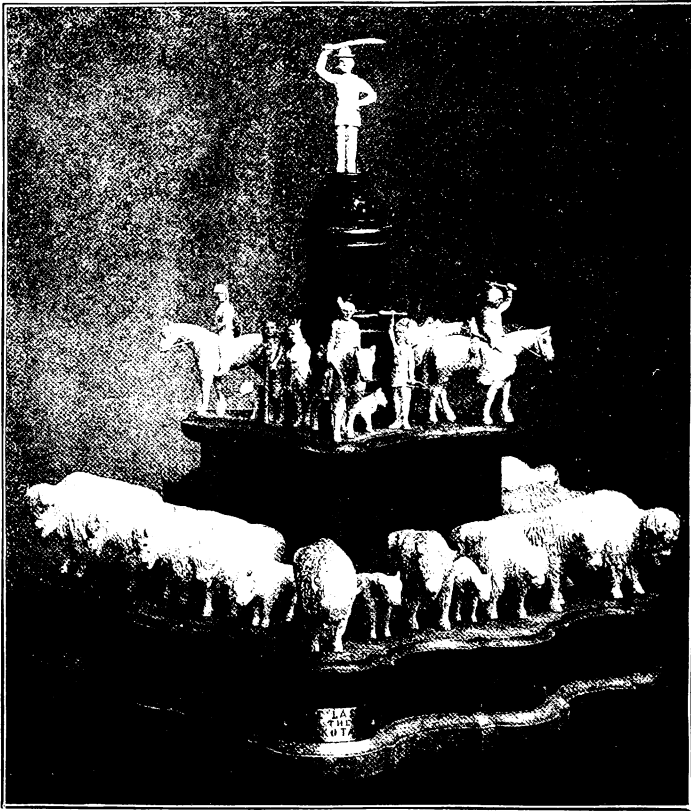


Fig. 4 —THE LAST OF THE DAKOTAS.

In Fig. 2 is shown the "Judgment of Paris," which the Doctor considers one of the best pieces. The figures are eight inches high, in a Greek temple twenty-two inches high, with carved capitols on fluted columns, and a high carved dome.

In Fig. 3 are seen four statuettes, including Roland Reed in "Politician," Nellie Butler, the actress, and Omega. This latter figure illus-



Fig. 5.—GROUP OF ELEPHANTS.

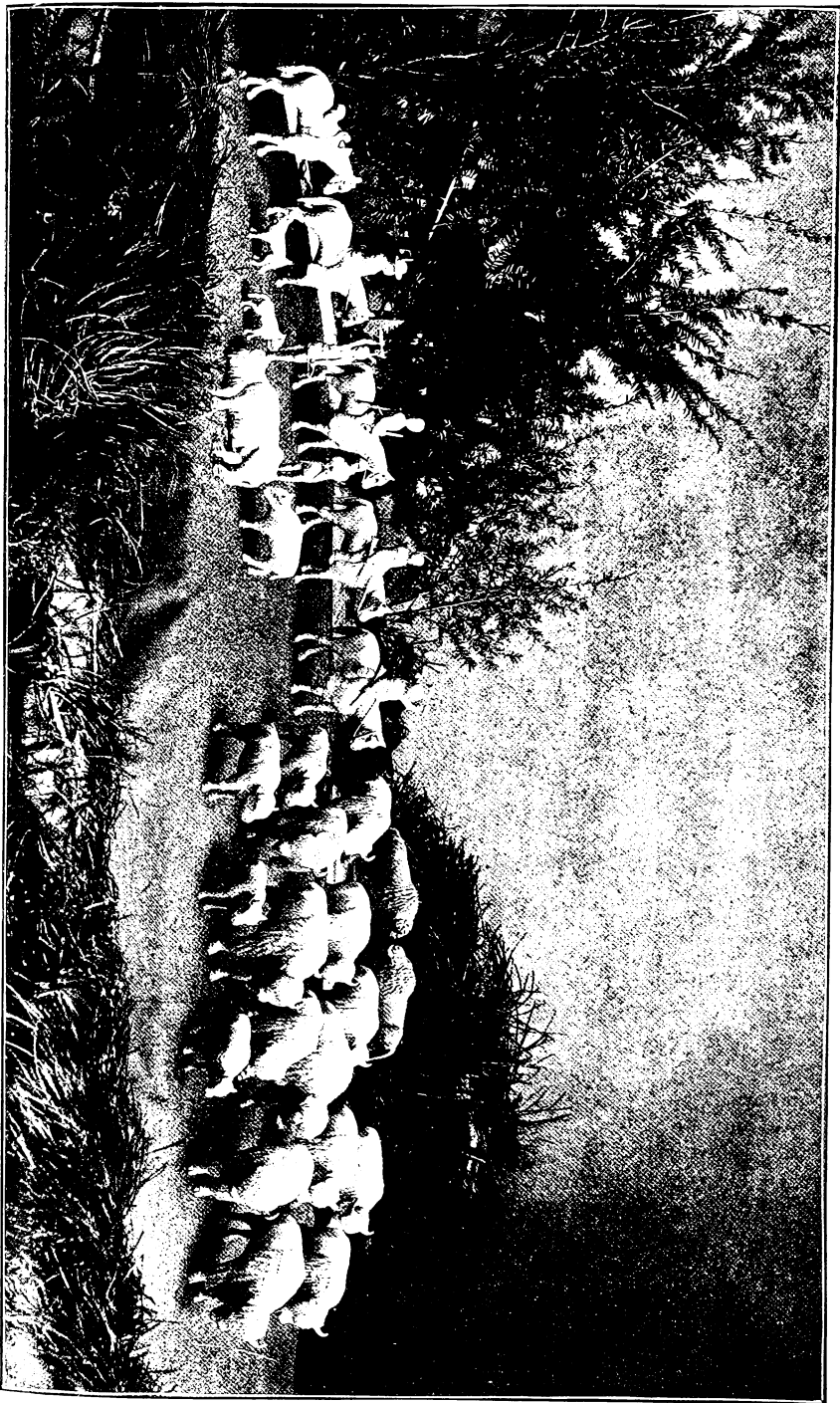


FIG. 6.—THE BUFFALO DRIVE.

trates a story which appeared in the "Cosmopolitan" several years ago. It represents a skeleton dressed in a robe standing on top of the earth, showing he was the last inhabitant of the globe. In front of these figures are seen a number of carved horns. This carving in horn is unique. The Doctor says that he has only seen two others; one in a museum in Germany, and the other in the South Kensington Museum in England. Etching and engraving on old powder horns was common in olden times, but these are regular cameo work.

Fig. 4 is a group entitled, "The Last of the Dakotas." On top of the pedestal is a white man, sword in hand. Below him are ten Indians, some being mounted, whilst on the lower base are a number of buffalos, the whole typifying the driving out of the buffalo and Indian by the white man.

Fig. 5 represents a beautiful carved group of elephants.

Fig. 6, called "Buffalo Drive," shows a number of Indians driving a herd of buffalos.





Simple Methods in Orthodontia.

By C. EDMOND KELLS, JR., D.D.S., New Orleans, La.

Nowhere within the realm of dentistry can greater satisfaction or pleasure be derived from well directed efforts than in the domain of Orthodontia, for there the results obtained not only speak for themselves, but constantly obtrude themselves upon the notice of those most interested, the patient, her (usually her) family and friends.

To take charge of a young girl whose otherwise pleasing features are marred by irregular teeth, and transform her into "a thing of beauty and a joy forever" is a most interesting proceeding.

Believing that the trend in the correction of dental irregularities, has been in the direction of complicating the apparatus used therefor, and believing further that this is due in a great measure to most of the writers upon the subject in recent years, being more or less "specialists" in this line, I purpose to give in this paper a description of some of the ordinary cases which we meet with in this section of the country and the simple methods in use for accomplishing the desired results.

I must premise by saying that I will acknowledge that a specialist who devotes but a part of each day in attending to a comparatively few patients is in a position to successfully make and use any appliances, however complicated they may be, while an ordinary practitioner with his hands full of work of all kinds must of necessity be compelled to use the simplest and at the same time the most reliable means that will successfully accomplish his end.

As a matter of fact, in any case of irregularity, it would be no difficult task to devise an appliance by which these teeth can be brought into

the desired positions, provided this work were to be accomplished "in hand." But, when this appliance is placed in the mouth of a young patient, and said patient goes out of the office and follows his or her routine of life, that puts an entirely different phase upon the matter.

The question of paramount importance becomes, not only to make an appliance that will accomplish the desired results, but one that the patient can and will wear all of the time during the progress of the work, and with the least discomfort possible.

These appliances may be divided into two classes: removable, i. e., those that the patient can remove at will, and fixed, i. e., those that the patient can not remove, but which are secured to the teeth permanently (?)

**Classification
of Appliances.**

Each of these systems has its disadvantages and its advantages; and it remains to be decided in nearly every case which shall be selected by the operator.

Under the head of the fixed appliances the "Angle system" is probably the best known.

An objection to these appliances, to my mind, however, is that while the bands are either cemented or clamped rigidly to the teeth, they do not always remain there, for it is no unusual occurrence to have them come off during the progress of the work. Then, too often they have a way of coming off at the most inopportune times, when for one reason or another the patient can not call at once, and by the time that she does come, the teeth that were moved, have gone back more or less.

Again, if a patient during the progress of the work is taken sick, and can not come for perhaps two or three weeks, and the appliance comes off, it may happen that all of the work accomplished previous to that time would have been lost.

Another objection to the clamped bands, when they are maintained upon the teeth for any length of time, is that they are more or less injurious to the teeth upon which they are screwed, as they do not fit them hermetically.

Still another objection, a very serious one, lies in the fact that when any large number of the teeth are to be moved, such as in spreading the arch and rotating several teeth, including the movement of ten or twelve teeth, this system becomes most complicated.

That this system has some advantages and should be used in certain cases I will admit, but for the generality of work I believe appliances much more comfortable to the patient and involving the expenditure of much less time *by the operator* (a very important feature) are to be found, and

these belong to the second class or removable appliances, to which I shall now call attention, and limit myself entirely to those used in our work.

The principal objection that can be urged against these appliances lies in the fact that the patient can remove them at will, and while this is true, my experience has demonstrated that such action rarely occurs.

When, however, one finds that the patient will not wear such an appliance the remedy lies in adopting a fixed one.

In the very great majority of cases, however, the child desires the teeth straightened and wishes the work done as expeditiously as possible, therefore we can enlist her assistance if we proceed upon the correct tactics, and no trouble about not wearing the appliance ensues.

The general style of appliance which I use consists of a narrow vulcanized plate, including the crowns of the back teeth, excepting of course any which are to be moved, with screws inserted therein for the outward movement of teeth, and stiff wires attached for the bringing of outstanding teeth into line, or holding the corner of a tooth which is to be rotated; several modifications of these being found in the descriptions of practical cases which follow.

On page 130 of Guilford's "Orthodontia" is found a short description of appliances of this character, in which the salient features for insuring success are not mentioned, the result being that a failure would naturally follow their use by any one who would be led to adopt them by their seemingly attractive features.

The points upon which these simple appliances depend for their success, which points are not difficult to obtain, are:

- (1) A good impression, which may usually be taken with compound.
- (2) A good articulation of the plate with the opposite teeth.
- (3) The location of the screws in their correct places.
- (4) The adjustment of the plate so that it will produce little or no pain.

Perfect impressions should be taken with modelling compound of both the upper and lower jaws.

The casts are then mounted upon an articulator and the bite opened the requisite distance, which should be as little as practicable, and the plate modelled exactly as needed, in wax; while this is soft the opposite teeth are closed gently down upon it, and the surplus wax trimmed away, as the indentations of the cusps should be well marked but not deep.

Where screws are to be used the wax should have a thickness of nearly one-eighth of an inch to insure good anchorage, but these should not be vulcanized in the plate. A ledge is extended back of the incisors and cuspids against which the opposite teeth should strike firmly.

It is necessary that all of the back teeth (save those that are to be moved) should be covered by the plate and as many of the opposite teeth as possible articulate well against the plate.

The success of the appliance depends greatly upon the articulation, that in closing the teeth upon the plate, it may be forced solidly to its place.

Upon fitting the finished plate, in case the articulation is not quite perfect, a carborundum wheel, about three-eighths inches in diameter, in the engine, forms a more convenient instrument for its adjustment than a file, and the use of articulating paper may prove of advantage.

Given any tooth to be moved by a screw, and it may present a surface of nearly one-half inch from the cutting edge to the gum line, at any point of which a screw may be made to impinge against it; but *there is only one point* at which said screw can be used to the best advantage.

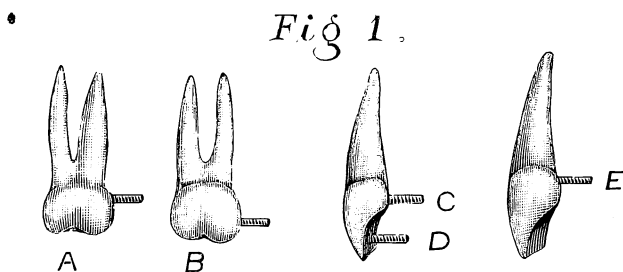


Fig. 1 shows the outline of a bicuspid against which a screw is shown at A in the correct position. At B is shown the same with the screw in the incorrect position. In the one case, upon the insertion of the plate the screw is forced past the convexity of the tooth, the tooth is sprung out, and the plate holds securely. In the other the plate merely rides upon the screw, as the tooth presents a certain "springiness" which prevents the plate from "going home." Likewise with a central, the point of impingement of the screw should not be at C, but at D. Molars should be treated like bicuspid, and laterals like centrals, while cuspids usually must have the screw strike them just at the gum line, as shown at E. With screws properly placed the work can be done expeditiously, while if they are incorrectly placed the work may be prolonged almost indefinitely.

Upon trying in the plate, care must be taken to see that it fits snugly all around, goes "home," and does not rock. The rubber in extending over the back teeth should not usually impinge upon the gums upon the buccal surfaces.

A plate very carefully made requires but little fitting. The patient

should be allowed to wear it for one day before putting any screw in it, and thorough instructions should be given in regard to taking it out and replacing it, brushing after meals, etc., of course.

The following day one or two screws may be put in, it being advisable not to put in more than two at one time, beginning with that number and adding others from time to time.

If the screws are turned too much the plate will not go to its place at all, and no progress will be made; it is therefore advisable to turn the screws very little twice a day rather than to move the teeth that distance by one extension of the screw. This may be done by the patient, as will be explained later.

With but little pressure against the tooth or teeth, they will be sprung out almost at once, and the plate "settle" to its place very soon. This is an important element of success.

The screws being under perfect control, can be so adjusted as to cause little or no pain in the movement of the teeth, a very important feature in dealing with most little patients, and absolutely necessary with some.

Where teeth stand without the arch and must be brought in, the same style plate is made, that is, covering the molars and bicuspid, and with wires secured where necessary, as will be shown.

Where but little pressure is required irridio-platinum wire may be used, but when much pressure is needed, piano wire must be relied upon. By bending this from day to day, any required degree of pressure may be obtained, and the teeth will be moved as rapidly as should be desired, and with but little pain.

Where a lateral or central is to be rotated, by combining the stiff wire on the labial surfaces, and screws impinging upon the inner corners, these teeth may usually be aligned with but little trouble.

With appliances of the character to be illustrated, but a fraction of an operator's time is required as compared to the use of fixed appliances.

To further facilitate the work the various screws, with the taps and drills to fit, should be kept at hand in a little case divided into compartments.

The How posts (three sizes) with their taps and drills are particularly adapted to this work; the ends of the screws, however, should be slightly rounded before being used.

I have never discovered the slightest injury done any teeth by the use of these screw as described.

When a patient calls, it requires but an instant to select from this case the proper screw, with the drill and tap to fit, and but a moment to have it inserted in the plate, no time having been lost in looking for anything.

If the hole of the proper size is drilled in the plate and tapped, a screw can be readily inserted with a pair of plyers, but if a two-hole hand tong is used, which is the name of the little instrument shown in Fig. 2, it will grasp and hold the screw so well that the tapping of the hole is usually unnecessary, the screw cutting its own way into the comparatively soft rubber, thus saving some time. Any further turning is done with plyers.

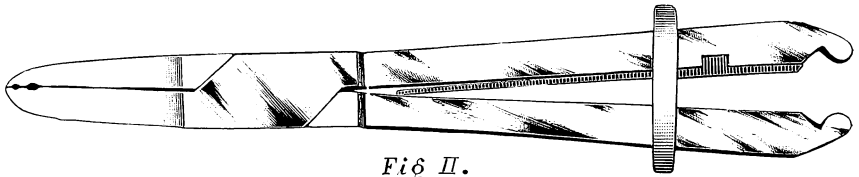


Fig II.

When a screw is inserted it should first be brought just through the plate and then given from one-quarter to one-half a turn, depending upon the rigidity of the tooth to be moved; then cut off upon the lingual side leaving it just sufficiently long to handle in the future. Melted shellac is dropped upon the palatal side thus covering up the rough screw, and preventing any irritation of the tongue. This is an item that must not be forgotten.

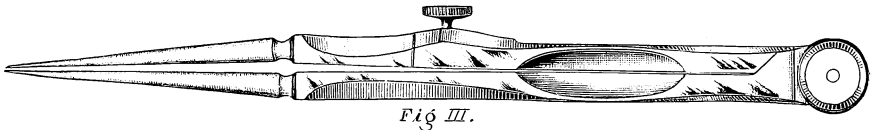


Fig III.

Very often the patient, or the patient's mother or father may be shown how to manipulate the screw, directed to give it one-quarter turn to the right, morning and evening, shown how to cover it with shellac, furnished with a stick of shellac and pair of plyers and then told to return every two or three days for inspection of the progress of the work.

In this way very frequently a great deal of the operator's time is saved and yet the same result accomplished.

A small pair of dividers like those shown in Fig. 3 are necessary for measuring the distance between the teeth upon casts taken at various stages of the work.

In the following cases the forms of irregularity most frequently met with in our practice are shown, and it might be interesting to compare these appliances to those shown for accomplishing the same results, in the

pamphlet on the Angle system and in Dr. Guilford's *Orthodontia* edition of 1898.

For these appliances I claim absolutely no originality. The use of the screw as shown, I was taught by my father nearly twenty-five years ago, and it has been used ever since; while wire in combination or alone was used in various ways.

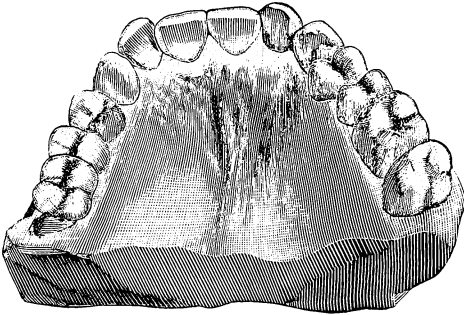


Fig. A.



Fig. B.

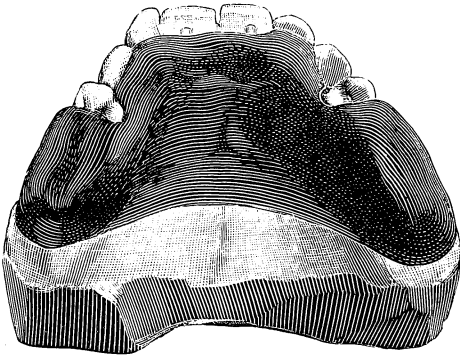


Fig. C.

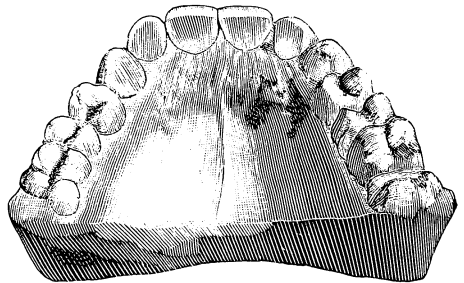


Fig. D.

The particular form of wire used in groups two, three and six I believe should be credited to Dr. Jackson. But I do claim that by the aid of these simple appliances I have satisfactorily treated several hundred cases, and to those who may not be satisfied with their present methods for accomplishing these results, I would heartily recommend their trial, laying particular stress on the several features upon which I have emphasized the result depends.

Group 1.

Shows a case wherein the central incisors stand well within the arch, and here we find considerable mechanical abrasion upon the lingual surfaces of the

central incisors.

A shows the case as it presented.

B the appliance for correcting the irregularity.

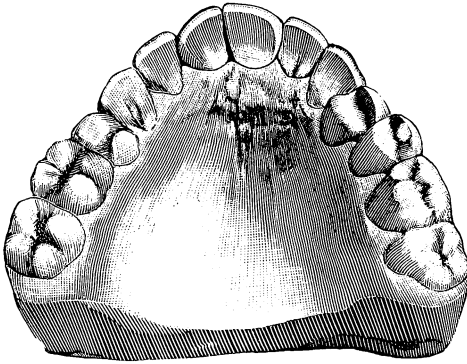


Fig. E.

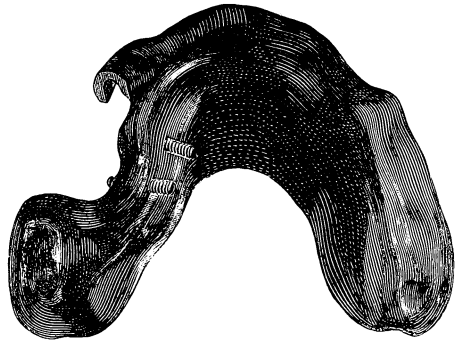


Fig. F.

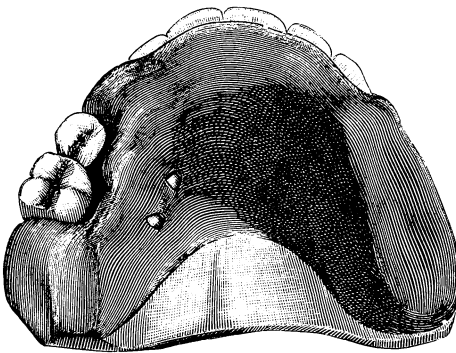


Fig. G.

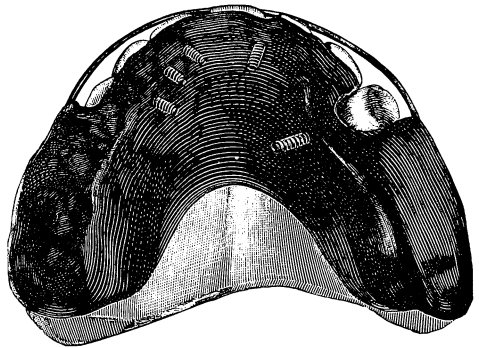


Fig. H.

C the case when it was nearing completion, the movement of the teeth being clearly shown.

D the completed case, the centrals being held in place by spurs attached to bands upon the lateral.

Group 2.

Shows a case of a Miss of fifteen, where the arch required spreading, both centrals rotated and retracted, involving the moving of eleven teeth in all.

Here it will be seen that the final result was impaired by the early extraction of one of the bicuspid.

E shows the original cast.

F shows the first plate for pushing out the molar and bicuspid.

G shows the condition when this plate had accomplished its object (clearly showing the movement of the teeth.)

H shows a later plate made when the work was nearly completed and only some little "trueing up" of the teeth was needed. Here the piano wires are shown by which the two centrals and right lateral were rotated, the wires causing pressure against the outer corners of the teeth, while the screws impinged against the inner corners. These teeth were thus rotated and aligned without the slightest difficulty.

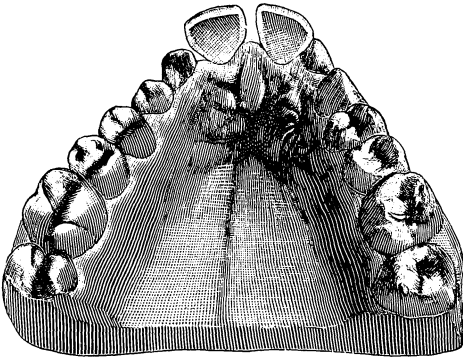


FIG. I.

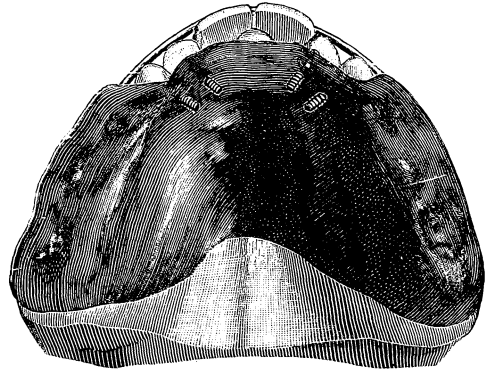


FIG. J.

Group 3.

Represents the case of a Miss of fourteen, showing that the arch must be spread, the centrals brought together and drawn inward. Although the cuspids were not fully erupted it was advisable to do this work at once.

The first appliance was the usual form as previously described for spreading the arch in the region of the two bicuspid, when the appliance shown below was put on.

I shows the case as it presented.

J shows appliance with screws in position for aligning the cuspids and laterals and piano wire for retracting and closing in the centrals, after the bicuspid had been spread.

In such cases the rubber plate is cut away as shown, from behind any teeth that are to be retracted.

A splendid comparison of the two systems, the fixed appliance and the removable plate system may be made in this case. Upon page forty-five of Dr. Angle's pamphlet of 1897 is shown practically the same case, with the fixtures for correcting the same. This is seen in J' to consist of bands secured to no less than six teeth, with bars, rubber ligature, tubes and collars *ad libitum*.

As the cuts speak for themselves, I take it nothing further need be said in favor of the removable appliances for such cases.

Shows a very usual form of mal-eruption of the permanent cuspid, caused quite frequently, but not always, by the retention of the temporary cuspid beyond the proper time.

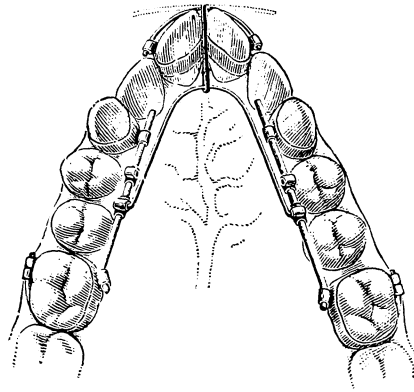


FIG. J¹.

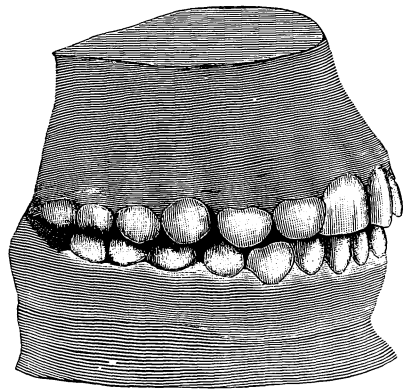


FIG. K.

The over bite here amounted to fully three-sixteenths of an inch, and such cases well exhibit the advantage of a plate which opens the bite and therefore allows the moving tooth to be brought forward without any interference with the lowers.

In such cases, if the ordinary jack-screw is put across the roof of the mouth, as soon as the tooth begins to move, it impinges against the lower, causes more or less pain (usually more) and I have seen failure result from this cause.

With this appliance, however, this difficulty is obviated, and the least possible soreness of the cuspid, during its migration, is given the patient.

K shows the case as presented.

L shows the appliance for moving the tooth, shellac not yet put on the screw.

Group 5.

Shows a case of a Miss of eighteen, where the front teeth are sadly in need of alignment.

M shows the case as it presented. M¹ the palatal surface of upper jaw.

N shows the appliance in place for the movement of the six anterior teeth, which work is shown under way.

In this case after the six anterior teeth are properly aligned, the cuspids will be rotated by means of bands attached.

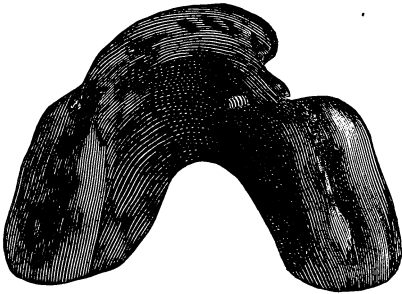


FIG. L.

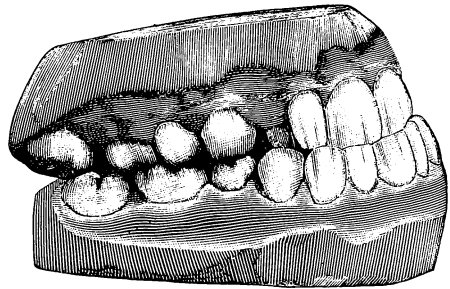


FIG. M.

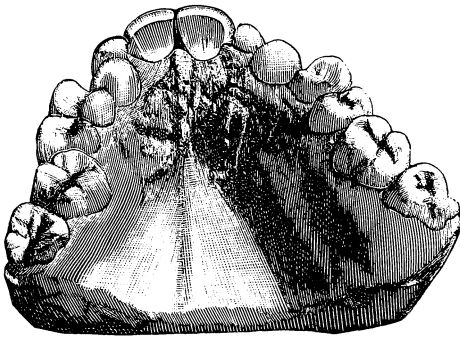


FIG. M¹.

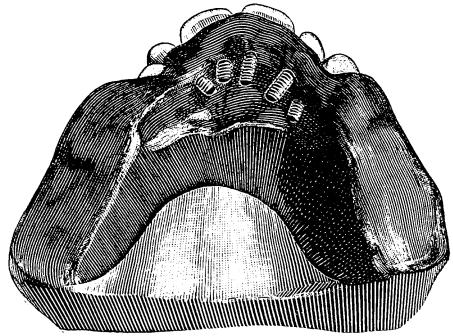


FIG. N.

Group 6. O shows a case of a Miss of fourteen whose lower incisors are twisted.

P shows the appliance for aligning the same. The screws impinge against the inner corners of the teeth, the stiff wires hold the outer corners firmly.

The gradual pressure of the screws and wires will bring the teeth into proper alignment.

Save in group I no retaining devices are shown in the preceding cases.

When teeth have been pushed outwardly and are not securely held by

their new occlusion, delicate retaining plates made of vulcanite are all that are necessary.

When teeth have been retracted, vulcanite plates with stiff gold wires extending in front of these teeth are used.

Teeth that have been rotated are the most difficult to hold, and bands and spurs are the most effective means for their retention, at least for the first three or four months, but as these are not always practicable, it becomes necessary to use appliances that will hold them rigidly. In these

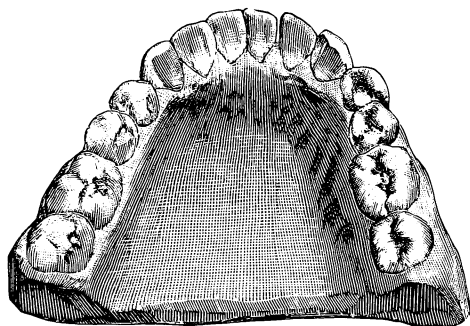


FIG. O.

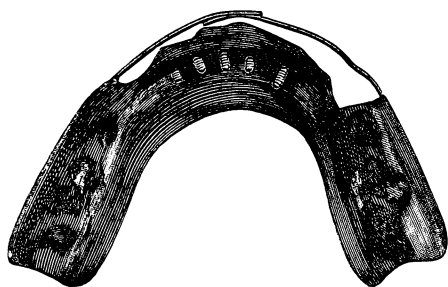


FIG. P.

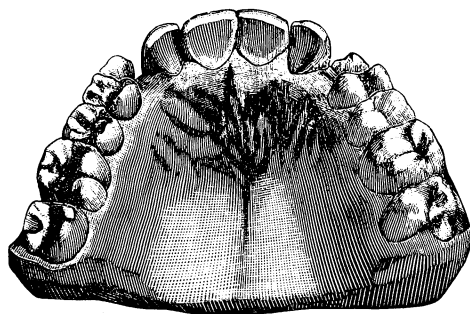


FIG. Q.

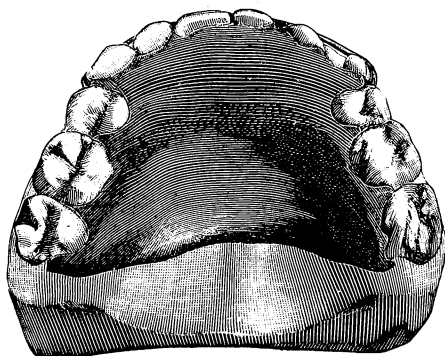


FIG. R.

cases I use a vulcanite plate fitting snugly against the lingual surfaces, with stiff gold wires, extending around their labial surfaces, thus holding the rotated teeth in a vise like arrangement.

This is to be used during the day, as it is not conspicuous. At night I furnish such patients with a delicate "glove fitting" splint. This extends over about two-thirds of the crowns of the six or eight anterior teeth and holds the teeth rigidly. The more firmly teeth are held in their new positions the less time will be required for the wearing of a retainer.

These retainers are illustrated in

Group 7. Q the case as presented. Note the second bicuspids were extracted and their spaces entirely closed.

R, the retainer worn in the daytime.

S, the glove-fitting splint worn at night.



Fig. S.

This latter appliance has given me the greatest satisfaction, covering, as it does, only about two-thirds of the crowns of the teeth; it clears the gum margins, and can readily be kept in a perfectly aseptic condition, and only being worn at night it need not articulate with the opposite teeth.

Save in only a few of the largest of cities the practice of Orthodontia can never be relegated to specialists, therefore the ordinary practitioner will always be called upon to do this class of work, and he should be able to accomplish the desired results satisfactorily to all concerned, and incidentally derive a great deal of pleasure, and no small measure of profit looking at it from a financial point of view.



A Few Interesting Cases of Dento-Facial Deformity.

By C. D. LUKENS, D.D.S., St. Louis, Mo.

I have felt for a long time that in the preparation of papers for our societies, and in our contributions to the periodicals, we expend entirely too much time and thought on the expounding of pet theories, and riding of favorite hobbies. Not that this should be discouraged, for logical



Fig. 1.

Fig. 2.

theorizing is the motive power which has borne us on to the grand, practical and scientific attainments which we as a profession are enjoying today. But more attention should be given and greater interest awakened in the reporting of interesting cases which come under our observation and care. Prompted by this conviction, I submit a few cases of dento-facial deformity, which I trust will prove of some interest:

Case 1.

Miss S., thirteen years of age, who had acquired and persisted in the habit of biting the lower lip until she had not only forced the upper anterior teeth, but the whole alveolar process, upward and forward, while the same pressure was carrying the lower anterior teeth lingually. (Fig. 1.) In treating this case, the expansion arch and wire ligatures were employed to carry the lower anterior teeth forward to their normal position; while at the same time the headgear was being used to bring the upper teeth down and back into their correct position. This was accomplished in seven weeks.

The lower teeth were retained by fitting and cementing plain bands on the cuspids, to which was soldered a piece of German silver wire that bore against the lingual surface of the incisors. This not only held the cuspids apart, but prevented the incisors from returning to their old position. The upper was retained by means of a perfect fitting shell plate to which was attached three thin blades of platinized gold plate; one passing between the central incisors and the other two between the laterals and cuspids. On the end of each blade was soldered, at right angles, a small piece of the same material. These two devices acted as perfect retainers, but had to be worn over eight months before the habit was entirely overcome and the teeth showed no disposition to return to their old position. Fig. 2 shows the final result.

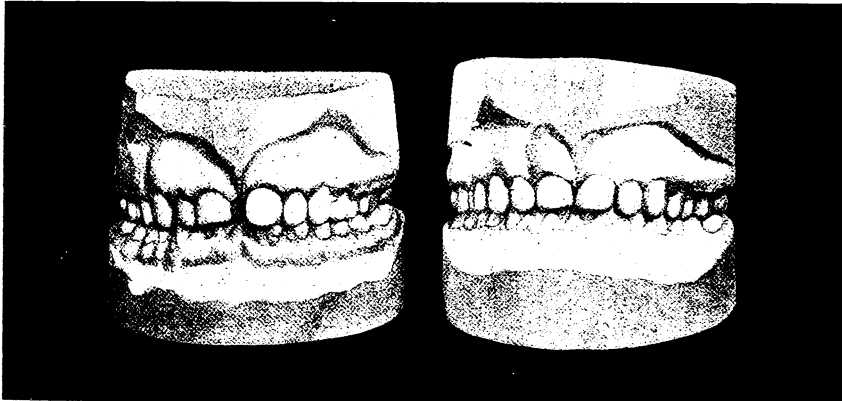


Fig. 3.

Fig. 4.

Case 2.

A very interesting case of over-development of the *fracnum-labii* in the mouth of a young lady sixteen years of age. (Fig. 3.) The fraenum was developed to such an extent that it passed between the centrals as a fibrous cord, exerting not only a passive, but an active influence by every movement of the lip, which was operating to spread the lateral halves of the upper arch and allowing the lower anterior teeth to elongate from lack of occlusion. This case was treated by the placing of close-fitting bands upon the central incisors, on the mesio-labial angle of which were soldered short spurs of sufficient length to engage a wire ligature; these were then cemented into position and allowed to set for a day, then the fraenum was removed by passing an actual cautery knife through the frae-

num from labial to lingual, care being taken not to touch the periosteum with the instrument. Pressure was immediately applied by means of a wire ligature around the spurs in the form of a figure eight, which was tightened every second day. At the end of two weeks, the centrals were in contact, the cautery knife was again employed, but only to cauterize

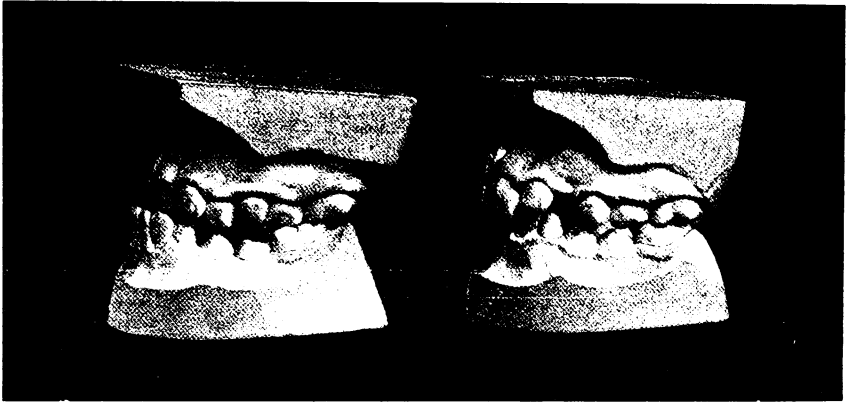


Fig. 5.

Fig. 6.



Fig. 7.

Fig. 8.

the labial surface slightly, where there still remained a slight depression. This was done to take advantage of the formation of cicatricial tissue and the consequent shortening to assist in retention which was accomplished by the soldering together of plain bands fitting the centrals and cemented in position. Enough was then ground from the incisive edge

of the elongated lower incisors to prevent them from occluding with the linguo-gingival margins of the uppers, and thereby forcing them labially. After four months the retention was removed and there has not been any tendency to return. (Fig. 4.)

Case 3. Casts of the mouth of a boy nine years of age whose inferior maxilla had been drawn forward and held in mesial occlusion by the superior incisors taking position lingual of normal. (Fig. 5.) It will be noticed by the occlusion of the molars that the mesio-buccal cusp of the superior first molar occludes just one cusp distal of normal. This can be taken as good evidence of the fact that the inferior maxilla has been drawn forward in the glenoid-fossa. This case was treated by lacing the superior incisors



Fig. 9.

Fig. 10.

to the expansion arch with wire ligatures and carrying them forward by tightening the nuts against the mesial ends of the tubes on the molar clamp bands. At the same time the chin cap was employed in connection with the headgear and heavy elastic ligatures to force the inferior maxilla back to its normal position. This was accomplished in a little over three months. While these movements were being carried on, the upper first bicuspid was being rotated, by means of a band cemented to the tooth with a spur soldered on the disto-lingual angle, engaging a wire ligature that passed on around the arch and was tightened every third day. The case was retained by allowing the expansion arch to remain in position for about three weeks after the movement was completed; by this time, the incisors were locked by occlusion, while the chin cap was worn every other night for about five weeks as an extra precaution, after which it was dispensed with entirely and the bicuspid was held in its new

position by a band to which was soldered a short spur, extending distally from the disto-buccal angle and resting against the buccal surface of the deciduous second molar. Fig. 6 shows the completed case. Figs. 7 and 8 show the change in the facial lines of the patient.

Casts of the mouth of a boy ten years of age where just the opposite condition from that of the preceding case existed (Fig. 9) giving the patient's face that weak appearance always associated with this condition, which I feel certain was brought about by the premature loss of the deciduous lower molars; allowing the lower arch to shorten and the strong, well

Case 4.

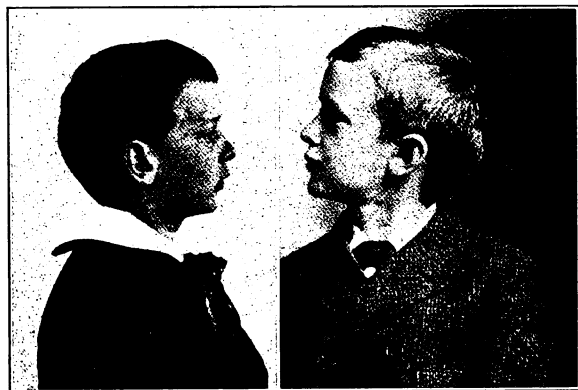


Fig. 11.

Fig. 12.

developed upper lip forced the erupting superior incisors down on the lower teeth until the incisal edges of the lower occluded with linguo-gingival ridges of the upper and this gradual pressure forced the lower jaw into distal occlusion. The whole inferior maxillary had been forced distally, as shown again by the molar occlusion. The case was treated by expanding both upper and lower arches to their normal size by means of the expansion arch, to which the teeth were laced by wire ligatures. Then bands were firmly cemented to both upper and lower first permanent molars. To the lower was securely soldered a spur of number ten gauge German silver wire about an inch in length which curved forward and upward bearing against the mesial surface of a heavy lug of the same material soldered to the buccal surface of upper band; this held the lower jaw forward and compelled the patient to bite normally.* This device

*A case of jumping the bite.—Editor.

was worn continually for fourteen months, with occasional shifting to other teeth, as the teeth to which it was attached showed signs of loosening under the strain. And now, after a lapse of five months, there is no disposition of the jaw to return to its old position. Fig. 10 shows the

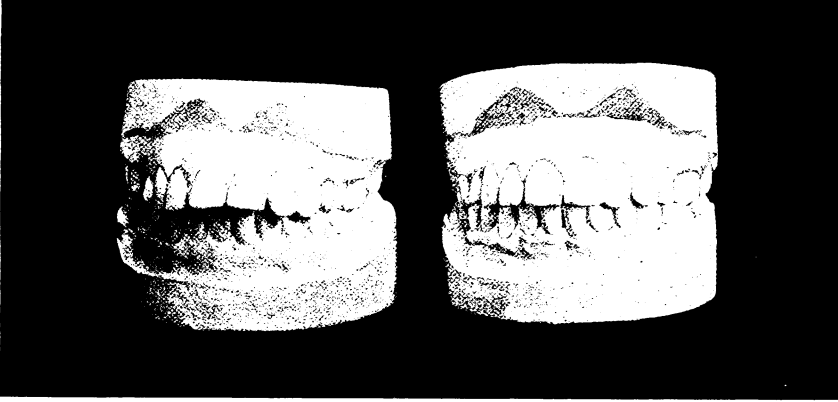


Fig. 13.

Fig. 14.



Fig. 16.

Fig. 15.

corrected occlusion. Figs. 11 and 12 the change in the patient's facial line.

Case 5. A marked case of protrusion of the upper teeth, the patient being a young lady twenty-three years of age. (Fig. 13.) The occlusion was normal on the right side, but distal on the left. So the first superior bicuspid was extracted on

the left side and the cuspid drawn back into position by means of a traction screw anchored to the first molar. The prominence of the incisors was reduced by means of the headgear and elastic bands. The movement was accomplished as shown in Fig. 14 in twelve weeks. The same means

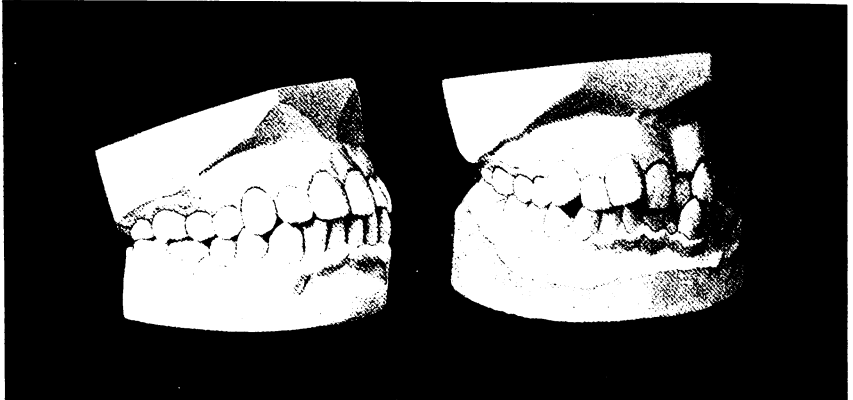


Fig. 18.

Fig. 17.

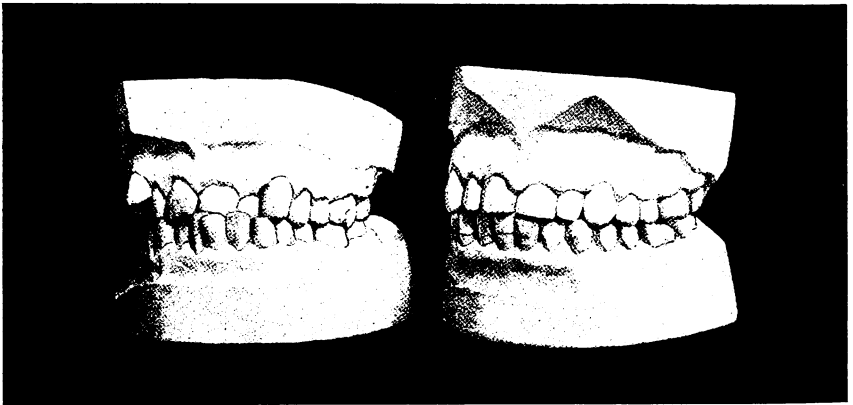


Fig. 19.

Fig. 20.

of retention was employed as in Case 1. Figs. 15 and 16 show in a slight degree the change in the appearance of the patient. The negative which was taken at the time operation was begun was destroyed, Fig. 15 being from an old faded photograph in the possession of the patient.

Cast of the mouth of a boy fourteen years of age. (Fig. 17.) The teeth were very badly bunched. This case was treated by cementing bands on the incisors and cuspids of both arches to which was soldered spurs

in suitable position for rotation which engaged wire ligatures that passed around the expansion arch. After each tooth was placed in its correct position the anterior teeth were retained by means of bands and spurs cemented on the teeth, and the lateral expansion of both upper and lower was held by small shell plates. The movement was accomplished in thirteen weeks and retained seven months, after which the teeth showed no signs of returning. Fig. 18 shows the completed case.

Case 7. Another case of the same type which was treated and retained in the same manner. (Fig. 19.) The time for the movement required seventeen weeks and retainer worn about nine months. Fig. 20 shows completed case.

Expanding the Lower Arch.

By V. H. JACKSON, D.D.S., New York, N. Y.

In connection with the many forms of apparatus recommended by the author for the "Expansion of the Dental Arch," may be described Fig. 1. It illustrates an appliance that was used for broadening the lower arch in the case of Miss G., aged 13 years.

The appliance was constructed on a plaster model of the teeth, by shaping gold partial clasps No. 34 standard wire gauge with contouring pliers to fit the lingual sides of all of the teeth to be moved. Crib springs were then made to encircle the first bicuspid and the first molars, forming crib attachments for anchorage. (See *Cosmos* 1891, page 1067.)

A spring base wire, No. 14 standard wire gauge, was shaped so that about one inch of the wire, more or less, followed the lingual curve of the gum surface back of the lower teeth, considerably below the line of the margin of the gum, but not low enough to interfere with the action of the tongue. Each end of the wire was bent forward upon itself, and again backward, being drawn into close but gentle curves forming the shape of the letter S as seen in the figure, with the distance between the loops in each of the S-shaped sections about one-half inch. The ends of the spring base-wire were then fitted to the partial clasps with the ends of the crib springs on either side of the arch and soldered with a high grade of soft solder with a soldering iron. Having the base-wire shaped into the form of a letter S on each side of the median line in this manner, permits the necessary changes for broadening the arch without warping the apparatus, or interfering with the established relationship of the anchorage portions with the teeth that they are made to clasp.

The action of the apparatus is caused by changing the shape of the loops in the spring base-wire from time to time by bending them outward in the following manner: Hold the end of one of the lower loops firmly with a flat nosed plier, and bend the wire by pressing outward the crib portion a little with the hand. Then take the corresponding upper looped portion of the wire in the pliers, and hold firmly with the other hand the short central part of the wire that rests back of the front teeth and press outward with the plier a little to bend this part of the loop to correspond with the first.

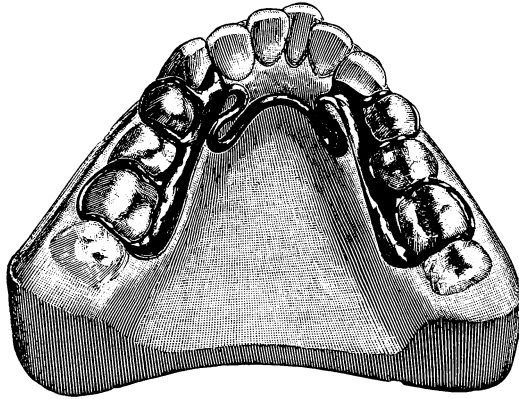


Fig. 1.

When it is desirable to again change the appliance for causing more pressure, the double loop on the opposite side of the median line should be bent the same as described, usually making these changes about once or twice a week. In some cases, however, the force is changed but once in two or three weeks.

The same or a similar appliance is used for retaining the teeth when the regulation is completed.

If the incisors are not in good line after the arch has been expanded, a finger spring can be soldered to the crib portion on one or both sides of the arch to extend forward and cause force for their correction.

Artistic Repairing of Defective Models.

By HERBERT A. PULLEN, D.M.D., St. Louis, Mo.

Models of irregularities of the teeth, on separation from plaster impressions, are often found defective in some particular, perhaps only slightly, yet enough to detract to a considerable extent from their appearance, as viewed from an esthetic standpoint. These imperfections may not be due to a faulty impression, in fact, the latter may be perfect, and the model obtained therefrom nearly ruined by the neglect of some slight detail in the processes following the taking of the impression.

By very simple means, many of these defects may be overcome, and a very artistic model obtained, if one is willing to spend a little extra time and skill upon it.

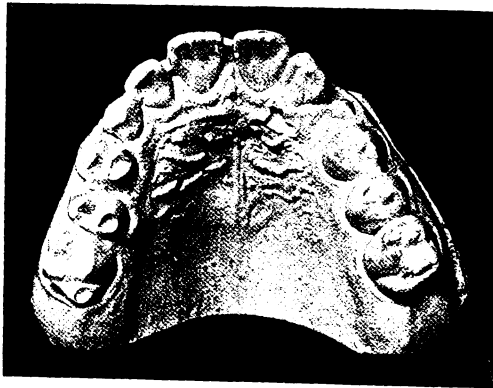


Fig. 1.

The Angle method of impression taking and model making has been followed in the preparation of the models illustrated below, and as this article refers only to the model subsequent to its separation from the impression, the technique of impression taking will only be mentioned in so far as it relates to repairable defects in the model.

The more common defects noticed in the model with the causes therefor enumerated, are:

First.

Air-bubbles. Cause, air not forced ahead of plaster in pouring impression, but buried beneath it.

Second.

Numerous indentations on the surface, due to careless use of the knife in separating.

Third. A honey-combed appearance of the teeth with crumbling and loss of cusps in separation, especially in the incisor and bicuspid region, due to the use of too thinly mixed plaster.

Fourth. Fractured or imperfect frenum, caused by enclosure of air-bubble in its impression, or carelessness in separating.

Fifth. Fractured teeth or cusps, cause:

(a) The attempted removal of too large blocks of the impression in separating.

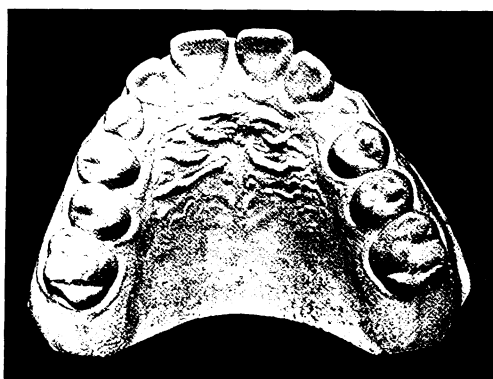


Fig. 2.

- (b) Application of force in the wrong direction in separating.
- (c) Cavities or undercuts.
- (d) Adherence of the teeth or cusps to the varnishes of the impression.
- (e) Dropping of the model.

Sixth. Transfer of the varnishes of the impression to the surface of the model. Cause, too long an interval between pouring and separating, or too thick varnishes.

Seventh. Lumps of superfluous plaster on various parts of the model, due to loss of corresponding parts of the impression.

Eighth. A roughened appearance of the surface of the necks of the teeth, with noticeable superfluity of contour, due to the non-removal of soft and hard deposits on the teeth before taking the impression.

Preliminary to the repairing of a model that may be defective in any of the above mentioned ways, one should be provided with an artist's camel's hair brush No. 2; a C. D. Mfg. Co.'s No. 13, or S. S. W. No. 7, wax spatula, with small blade sharpened on one edge; a receptacle for water; and a glass slab with a small pile of plaster of Paris on one corner of its surface.

To repair air-bubbles, the first defect mentioned above, the brush is saturated with water and the plaster in and around the air-bubbles moistened several times with it, when a small mix of the plaster and water to the consistency of milk, is made with the brush and quickly transferred from its point to the bottom of the bubble, repeating until it is filled, when the correct contour and a smooth surface is obtained by a twisting, wiping motion of the nearly dry brush over the surface.

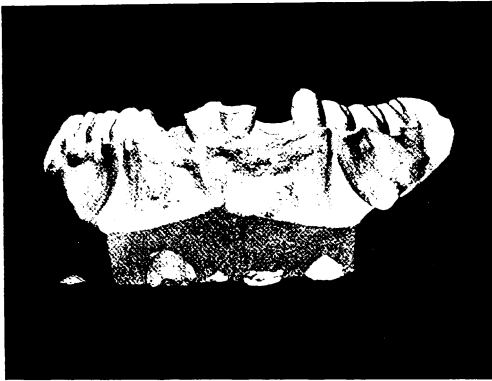


Fig. 3.

Fig. 1 represents a cast of the upper jaw immediately after separation, in which a large number of air-bubbles are in evidence.

Fig. 2 shows the same cast after these air-bubbles have been filled, and other defects removed.

Any indentation on the surface of the model may be filled in this manner.

The third and fourth defects require more skill and a knowledge of the minute anatomy of the parts in order to be able to restore by this method an incisor, for instance, which has crumbled to pieces; but after sufficient practice even such a delicate part as the *fraenum labii*, which seldom escapes fracturing in separating, may be built up if its attachments can be seen.

Fig. 3 represents a badly fractured cast—the right cuspid, both centrals and the left lateral having been accidentally broken off. Fig. 4 shows the same model after the fractured pieces have been reunited by this method. The right central was restored entirely by the building up process, as the fractured piece was lost.

Care should be exercised in carving the groove that enough of the approximating fractured surfaces be left towards the labial surface to ensure perfect adjustment.

Varnishes from the impression adhering to the cast may be removed by washing with cotton saturated with alcohol.

The seventh and eighth defects require the use of the wax spatula previously mentioned, the large blade being used to remove rear

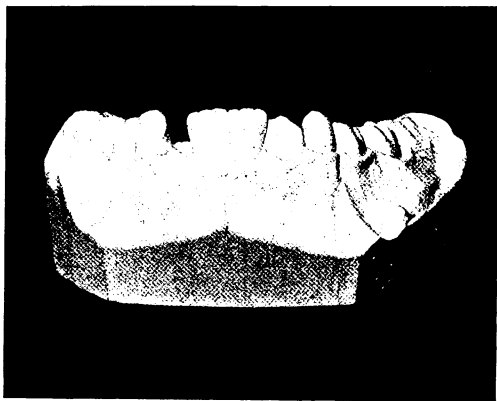


Fig. 4.

of plaster on the teeth and other portions of the model so disfigured, while the small sharpened blade is essential to the removal of the thin layer of superfluous plaster contiguous to the festoons of the gum, also in carving out any surplus plaster from the embrasures of adjoining teeth, and the cusps of bicuspid or molars which are imperfect. Figs. 3 and 5 are examples of its judicious use. Any attempt at carving beyond the shaving off of superfluous plaster, quickly shows its artificiality and should be avoided.

Artistic models should be the pride of the Orthodontist, especially if he bases treatment of irregularities upon occlusion of the teeth, and if the above suggestions will aid in some slight degree in the production of such models, the object of this article will have been fulfilled.

Fractured teeth or cusps have been usually repaired with cement which is unsightly against the white background of the model, especially in a photographic reproduction.

By manipulating the plaster as in filling an air-bubble, it will serve as a good substitute for the cement in all cases. As it is almost impossible to force plaster of any consistency into a crack, such as is visible on adjusting two fractured portions of a tooth together, it is advisable to widen the crack to a groove—linguo-labially for instance, on a fractured incisor, so that the plaster may readily flow into it, when on restoring the contour of the lingual surface, the crack on the labial surface may be touched lightly with the brush saturated with the thin plaster, and all traces of the fracture will disappear and a firm union will result after drying.

The requisites for the successful use of this method of repairing with plaster are—a continually moistened surface of that portion of the model needing repair; frequent small mixes of the plaster to about the consistency of milk with the brush upon the glass slab, sufficient quantity for one mix being obtained by first saturating the brush with water, and then quickly mixing with it all the plaster that adheres to the brush on touching the surface of the pile of plaster on the slab; finally the application of this thinly mixed plaster from the point of the brush to the particular portion of the surface of the model requiring repair.

Protrusion of the Upper Incisors and Retreating of the Lower Jaw Corrected by the Expansion of the Dental Arches and Jumping the Bite.

By DR. M. GONSALVES, Lisbon, Portugal.

In the *Dental Cosmos* for February, 1900, there appeared an article by Dr. R. Ottolengui, treating of jumping the bite, which concluded with the report of a case which proved the possibility of the operation. This paper, however, seems to have aroused considerable controversy among some of the eminent specialists in Orthodontia, who claim that such an operation is impracticable. I, therefore, offer a description of a quite remarkable and authentic case treated by me which, I trust, will tend to corroborate the claims of Dr. Ottolengui.

Miss Maria Mendes Rosa, twelve years of age, residing in Lisbon, came to consult me on the 10th of February, 1897, about the abnormal condition of her teeth and mouth, which caused a great deformity of her features, giving to the face a very extraordinary appearance.

The upper arch, as it can be seen in Figs. 1 and 2 was narrow, the central incisors protruded considerably, and the laterals were inlocked between these and the canines. The lower teeth were regular, but the jaw retreated a tooth behind, so that the first lower bicuspid on occlusion, took the place of the second, by lodging their cusps between the upper bicuspid.

My first plan was to extract the first upper bicuspid and force the upper incisors back, but, before undertaking the operation, I took the im-

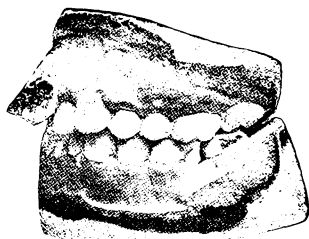


FIG. 1.

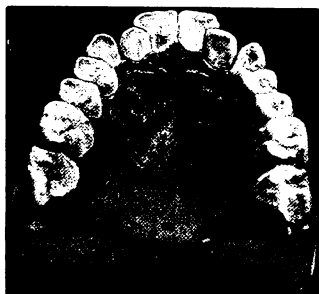


FIG. 2.

pression of both jaws and sent the plaster casts to my friend, Dr. John Spaulding, of Paris, with the view of obtaining his opinion regarding the best mode of procedure for the reduction of the deformity. His answer was that there were two ways; one, the extraction of the upper bicuspid, as I had first thought, and the other, the expanding of the upper arch and jumping the bite.

This operation of jumping the bite, of which I had read in Dr. Kingsley's works, I had never had before in my practice a suitable opportunity to try, and I thought this would be a favorable case, as the patient could give me time and was willing to let me do all that I thought necessary to correct the deformity and improve the unfortunate appearance of her mouth and face, I resolved to undertake it, and proceeded in the following manner:

Method of Procedure.

A rubber plate was made to fit the roof of the mouth, split in the middle and a little on the sides, according to the Coffin method, and the arch forced to expand by the action of powerful jack screws,

which were turned a little every day, the force acting on the molars, bicuspid and cuspids only, until room was made to bring forward the lateral incisors and draw back the centrals to form a regular arch, as may be seen in Fig. 3. This result was obtained in twenty-five days, and the teeth retained in position by a rubber plate, fitting tightly to the roof of the mouth, with a narrow gold band passing closely from the cuspids over the labial surfaces of the incisors.

Now that the upper teeth were regulated to entire satisfaction, my attention was directed to the lower jaw, where the teeth were very regular but the articulation very defective.

As a result of the expansion of the upper arch, the only points of contact, on occlusion, were the buccal cusps of the second lower molars (the

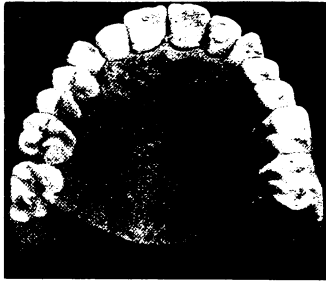


FIG. 3.

first having been extracted long before) with the lingual cusps of the first and second upper molars. The lower arch was also expanded (not so much as the upper, as it was intended to come forward), and the teeth kept in position by a retaining plate. An upper plate was constructed of rubber, bearing an inclined plane lined with gold, long enough to catch the cutting edges of the lower incisors and compel them to slip forward in every attempt of occlusion of the jaw. The gold lining was to render sliding easier and prevent the rubber wearing out by rubbing of the teeth.

**Jumping
the Bite.**

I ordered the patient to wear this plate constantly, which should only be taken out to be washed after meals, and morning and night, and put back immediately. For the first two weeks very little difference

was noticed, and the efforts of the patient to carry the jaw forward were painful about the temporo-maxillary articulation and the last molars, which were the only teeth to meet, preventing the bicuspid and incisors touching their antagonists, but the trouble soon passed, and afterwards,

little by little, the molars sunk in their sockets and the patient succeeded in bringing the cutting edges of the lower incisors close to the posterior surface of the upper incisors.

In this stage, the jaw had acquired the right position, and the teeth seemed to be well directed for normal occlusion, though there was a space between the bicuspid of both jaws a little more than a millimeter wide. As the teeth were well directed, I thought time only would accomplish the work by approaching the grinding surfaces. I recommended to the patient strict cleanliness, prescribed for the purpose a suitable mouth wash, and invited her to call every fortnight. At every visit after this, I noticed the teeth were gradually approaching, until at the end of four months, the opposite grinding surfaces touched each other in the most correct and satisfactory manner, as seen in Fig. 4.



Fig. 4.

I then took out the plate with the inclined plane, and remarked there was still a tendency of the jaw to go back, but the irregular contact of the teeth being, in this way, uncomfortable to the patient, she instinctively sought her ease by bringing the jaw forward to the right occlusion. I put the plate back in the mouth and ordered it to be worn a month longer. At the expiration of this period, I no longer noticed the retreating tendency of the jaw, took the biting plane away and replaced it with the former retaining plate with gold band to secure the position of the upper central incisors. This was worn a year, during which I saw the patient several times and noted that all was going well.

It has now been eighteen months since the last appliance was removed, and no alteration has occurred in the position of the teeth. The patient, her relatives and myself are entirely satisfied with this wonderful success which, I must confess, was greatly owing to the good will and persistence of the patient, who never missed an appointment, and during the long course of treatment strictly followed my advice and recommendations; otherwise my efforts would have undoubtedly failed.

Regarding the explanation of this phenomenon, jumping the bite, as I understand it, consists either in a change in the tempero-maxillary articulation induced by absorption from pressure of the condyles on the anterior wall of the glenoid fossa, or by flexion of the condyles on young and flexible bone, depending one way or the other on the physical constitution of the bone and the length of the condyles.

No matter how the phenomenon may be accomplished, which I do not pretend to determine, the fact is that it can be accomplished; and this case, besides many others, is an eloquent proof of its possibility. Against facts, there is no argument.

I wish to express here my gratitude to Dr. Spaulding, who suggested the procedure, and to Dr. Norman Kingsley, who taught me how to accomplish it through his excellent book, "Oral Deformities."

Device for Retracting Single Teeth.

By HENRY KNOWLES, D.D.S., Washington, D. C.

I wish to call attention to a very simple appliance that was used recently to retract a superior right central.



The appliance consisted of a strip of German silver of about twenty-seven gauge and an eighth of an inch in width. The central portion was made to pass over the labial surface of the malposed tooth, the ends resting against the palatine surfaces of the adjoining central and lateral. The right central was not only drawn into position, but space was at the same time provided for its accommodation. As the space between the left central and right lateral was increased, a new turn was given the strip so as to exert more pressure. However, new strips can be cut and shaped almost as quickly as the old one can be altered.

I have found this little device gives more satisfactory results than some of the complicated appliances, and it can be made in a moment.

The Arch Bar as a Regulator, Retainer and Base of Anchorage.

By DR. MILAND A. KNAPP, Minneapolis, Minn.

Among the most simple and universally applicable regulating devices is the arch bar and its various combinations.

It has appeared in a great variety of forms, from a smooth round or half round wire to a semi-circular ladder.

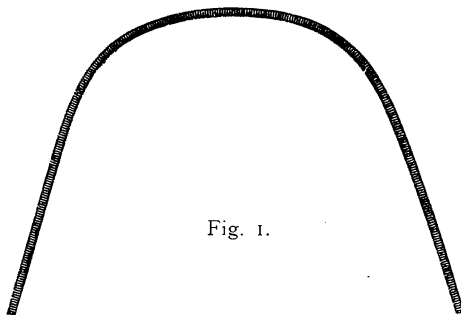


Fig. 1.



Fig. 2.



Fig. 3.

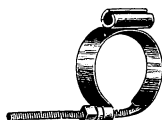


Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.

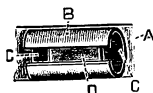


Fig. 8.

Its general usefulness increases as its complexity and bulk diminishes. It should be small enough to be comfortably worn in the mouth, and yet of sufficient strength to withstand the strain to which it must necessarily be subjected. It must also be of much temper as to readily admit of being bent to any required form without breaking and still be rigid enough to hold its shape while the teeth are being forced into the required positions.

The greater the number of teeth to be moved in the same general direction, the more useful will the arch bar become for their rapid and simultaneous migration.

**Apparatus
Described.**

I have found the simple entirely threaded wire, as shown in Fig. 1, to be the most useful form, and, with the aid of a few nuts and bands for attaching it to the teeth, this form of bar can be used to accomplish a great number of different operations.

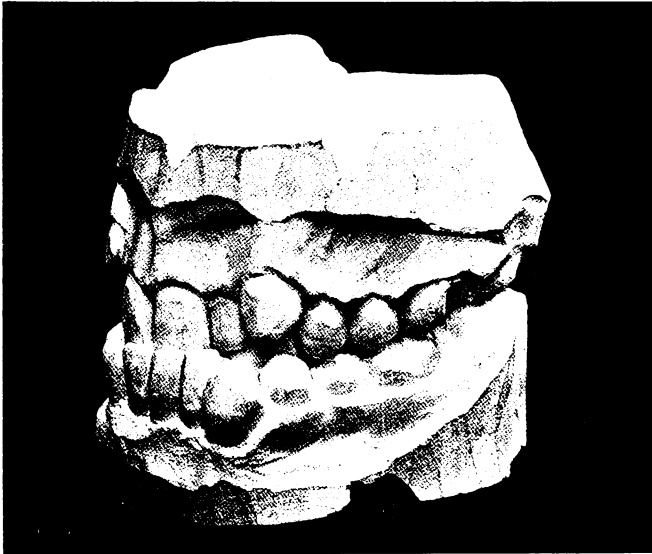


Fig. 9.

The three styles of bands most useful for arch bar combinations are shown in Figs. 2, 3 and 4, and the two styles of nuts in Figs. 5 and 6.

Fig. 7 is an enlarged drawing of one of the bar end caps. These are to be screwed tightly on the free ends of the arch bar which projects posteriorly from the clutch tubes on the molar bands. The caps protect the cheeks and tongue from irritation.

An enlarged drawing of the clutch tube attached to the molar band Fig. 4 is shown in Fig. 8 (A) shows a portion of the band; (B) the slotted tube. (C, C) are enlarged openings or sockets at each end of the tube which admit the cylindrical ends of the clutch nuts shown in Fig. 6. (D) is a slot through the side of the tube. This slot is just wide enough to let the arch bar easily pass in or out.

The cylindrical ends of the clutch nuts, being too large to pass

through this slot, will enter the enlarged openings at the ends of the tube by endwise movement only. Thus it will be readily seen that when the arch bar is placed in this slot and the cylindrical ends of two clutch nuts, which have been previously placed on the bar with their cylindrical parts approximate, are turned into the enlarged openings at the ends of the tube, the bar is prevented from again passing through the slot until the nuts have been released.

It will be observed that the bar is thus permitted to be quickly engaged or disengaged from its attachment to the band, and also that

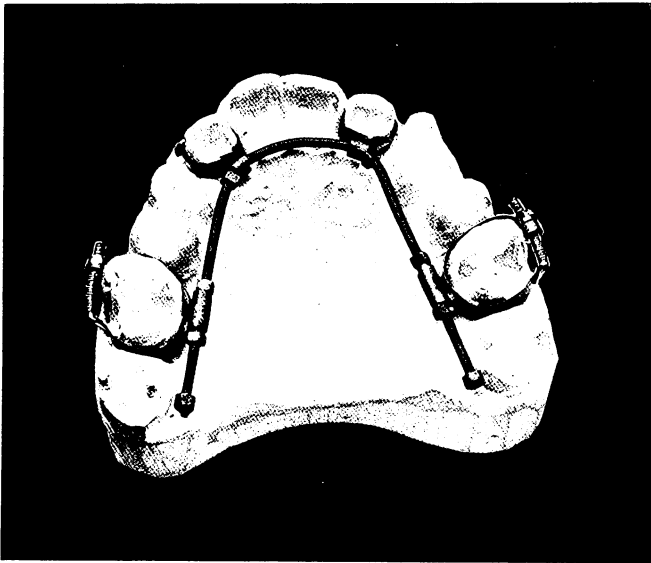


Fig. 10.

by tightening both nuts against the tube ends, the tube, nuts and bar are all firmly locked together, thus preventing any loss of movement once gained, and also making the appliance valuable as a retaining device, when left in place after the teeth have been moved.

Fig. 4 is a band to which is attached a single socket clutch tube, which is a tube one-half the length of the tube previously described, and has an enlarged opening, for the reception of the cylindrical end of the clutch nut, at one end only.

Fig. 2 shows a band having a threaded stud for the attachment of the various appliances; this band is also adjustable in size, having at its open ends, buttons around which a wire is attached, as is shown in the cut.

Fig. 5 is an enlarged drawing of a nut that is very useful when used in connection with the arch bar, as, being short, it will travel around curves in the bar.

Fig. 9 illustrates a form, or class, of irregularity that is very common, and one to which the arch bar seems to be admirably adapted.

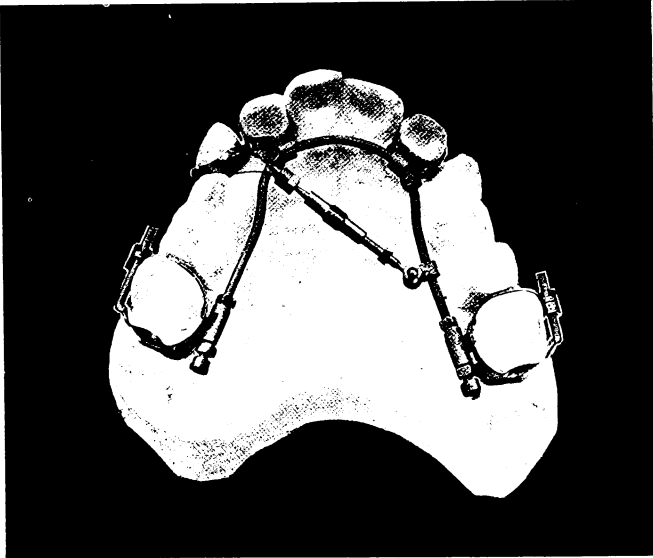


Fig. 11.

**A Case
from Practice.**

In this case the four upper incisor teeth occluded inside the lower. The cuspids were only partially erupted, giving the upper lip a sunken appearance and causing undue prominence of the lower.

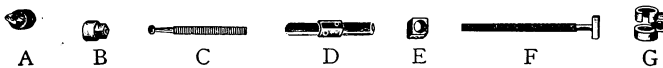


Fig. 12.

The lower left lateral stood directly back of the cuspid in close apposition to the first bicuspid. There being insufficient room in the arch for the three remaining lower incisors, the cuspid was held slightly outside the arch, while these teeth swung inside the arch and to the left.

It was not considered advisable to move the instanding lateral into the arch, as the size of the lower arch was already sufficient for the accommodation of the upper teeth when in position, so this tooth was extracted.

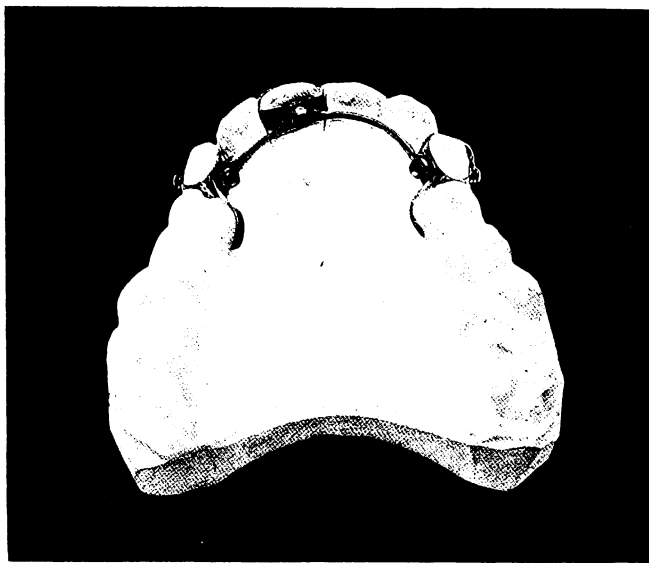


Fig. 13.



Fig. 14.



Fig. 15.



Fig. 16.



Fig. 17.

Screw bands (Fig. 4) were attached to each of the upper first molar teeth, and single socket bands (Fig. 3) to the laterals. An arch bar (Fig. 1) was then bent to the required shape and placed in position as shown in Fig. 10. It will be noticed, by referring to the illustration that two nuts (Fig. 5) were placed on the arch bar just posterior to the tubes of the bands on the lateral teeth. This prevents these teeth from sliding back on the bar as it is forced forward should such a tendency occur.

Clutch nuts (Fig. 6) were placed on the arch bar, two on each side in position to engage the clutch tubes, as before described, and bar end caps (Fig. 7) on the projecting ends of the bar.

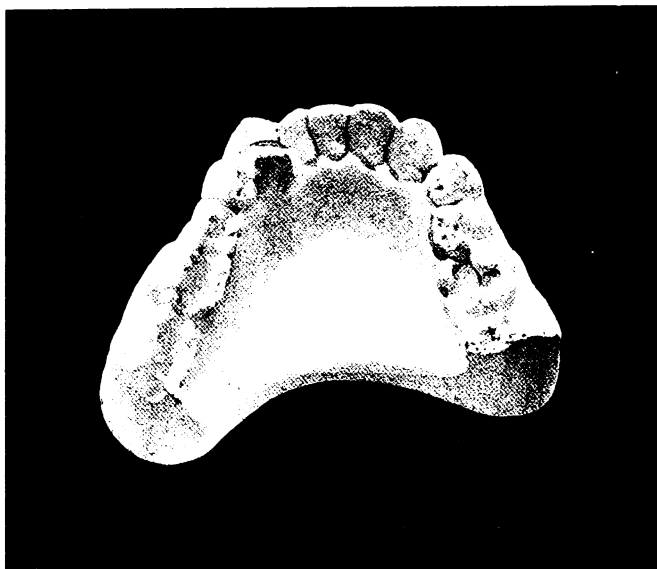


Fig. 18.

It will also be seen by referring to Fig. 10 that the arch bar is so bent that it does not at first press against the central incisor teeth. This allows the laterals to be moved forward a short distance, bringing the four incisor teeth into line, after which the four teeth are carried forward together.

The second part of this operation is shown in Fig. 11, the four incisor teeth having been moved forward sufficiently to overlap the lower teeth. This part of the operation consists of drawing the cuspid teeth into the arch.

A studded band (Fig. 2) was cemented to the right cuspid, and a rubber band looped over the arch bar and passed around the cuspid above the buttons. After two weeks lost time and extreme sensitiveness of the tooth, as is generally the case when rubber bands are used, the rubber was discarded and a jack-screw substituted, the parts of which are shown in Fig. 12. The arch bar was removed, the two clutch nuts and bar end cap unscrewed from the left side of the bar, and part G of the jack-screw put in position, as shown in Fig. 11. The nuts and bar end cap were then replaced, the arch bar put back in position and the jack-screw attached, as shown in the illustration.

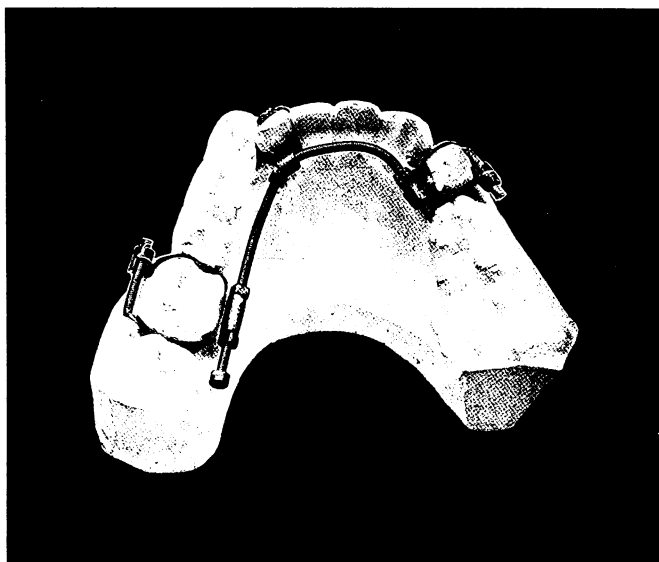


Fig. 19.

The jack-screw is attached to the cuspid by means of a wire passing over the arch bar, and above the buttons of the button band, which tends to elongate the tooth while drawing it into the arch.

Traction is applied by turning the nut to the left, which contracts the jack-screw and draws the cuspid into the arch until it touches the arch bar.

The cuspid was then held in position by tying the wire, to which it was previously attached to the jack-screw, to the arch bar.

The jack-screw was then changed to the opposite side and the remaining cuspid drawn in position in like manner. The second cuspid was then wired to the bar and the jack-screw removed.

The arch bar was left in this position for two or three weeks, or until the teeth had become somewhat fixed in their new positions, at which time it was removed and a retaining appliance put in place, as shown in Fig. 13.

Before applying the retaining appliance, the bands on the two laterals and molar teeth were removed, and a studded band (Fig. 2) cemented to the left central. A piece of No. 25 gauge German silver or 20 K gold (Fig. 14) is drilled to receive the studs of the three bands and the

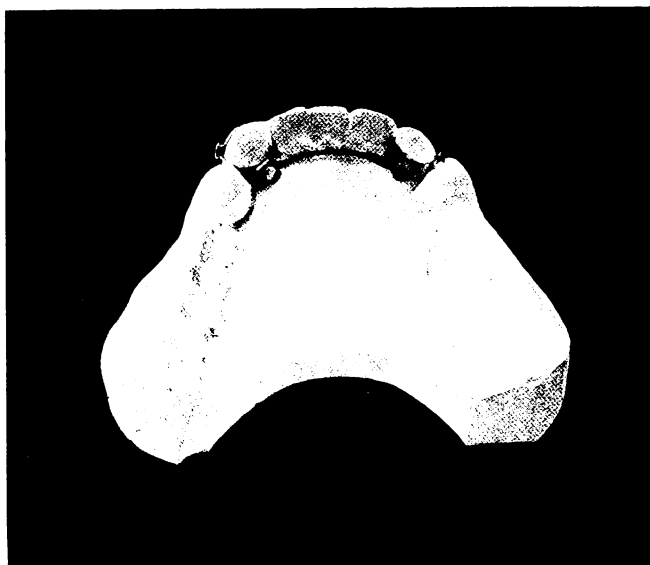


Fig. 20.

band narrowed between the holes by clipping out with a pair of plate nippers (Fig. 15), after which the piece is smoothed with a half round file (Fig. 16), bent to conform to the shape of the arch, placed in position and held by three nuts, as shown in Fig. 13. An enlarged drawing of the retaining nut is shown in Fig. 17.

Fig. 18 shows condition of lower jaw. Fig. 19 illustrates the appliance used for alignment of the lower teeth. One of the single socket bands, that had been used on the upper laterals, was cemented to the lower left central, a single socket band, with screw attachment, clamped on the right first bicuspid, and one of the screw bands, from the upper first molars, clamped to the lower left first molar. The arch bar was

then cut off, on the right side, so as to be just long enough to project slightly through the tube of the single socket band on the right first bicuspid.

After being bent to the proper form the arch bar was placed in position, as shown in the illustration. It will be noticed that the arch bar is so bent as to press on the teeth successively from left to right, in this manner swinging the teeth into line.

All the pressure was obtained from the clutch band on the molar tooth carrying the left side of the appliance forward with very little movement of the right.

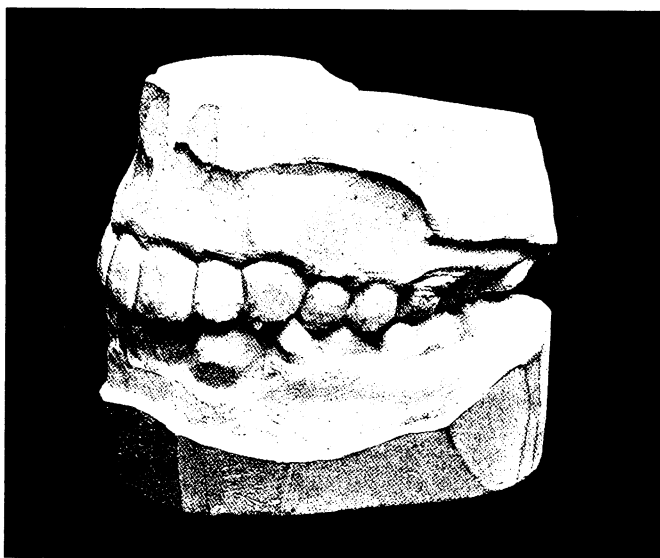


Fig. 21.

The retaining appliance used is shown in Fig. 20. Studded bands were cemented to the cuspid teeth, a piece of band (Fig. 14) drilled and cut in the same manner as the upper retainer (Figs. 15 and 16), but bent so as to draw the cuspid tooth of the left side inward.

The retainer was taken out two or three times so as to continue this force on the cuspid, and as soon as the cuspid had moved into its proper position in the arch this bending was discontinued, and both retainers left in position until the teeth had become firmly fixed in their new positions, after which the occlusion was as shown in Fig. 21.

To ascertain if the teeth have become firmly fixed, remove the retaining bars, leaving the bands in position, and instruct the patient to return in three or four days. If the teeth have moved the bar can be easily replaced.

A Case of Prognathism Developing Under Observation.

By WM. ERNEST WALKER, D.D.S., M.D., Pass Christian, Miss.

Professor of Dental Surgery, Including Orthodontia, Dental Department, University College of Medicine, Richmond, Va.

Not having had time to prepare a paper, as requested, for the special issue of *ITEMS OF INTEREST* on Orthodontia, I take advantage of the opportunity to present to the profession the report of a case which, in my experience, is unusual.

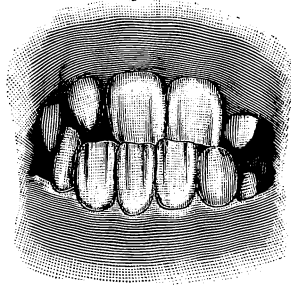


Fig. 1.

We have all had cases of *developed* prognathism; that is, cases come to the office presenting prognathism already present; but the accompanying figures illustrate the only case in my practice where prognathism has developed while I have seen the case from time to time. This little patient is neurotic by heredity (on the maternal side), and has, all her life, been afflicted with chronic, congenital neurasthenia. A better idea of her physical condition can be formed from the fact that her age is fifteen years; her weight, seventy-six lbs., and her height four feet seven inches. She is constantly under treatment for her nervous condition, part of the treatment being a daily morning spinal cold douche; every summer she is taken to New York for treatment by a specialist in nervous diseases. I may state that there are also ocular defects, manifest-strabismus being conspicuous, for which she is wearing glasses. I have not inquired as to focal defects.

I have seen her mouth, off and on, since September, 1894, during which time I have given her nine series of sittings, as follows: September, 1894; May and October, 1895; June and September, 1896; June, 1897; September, 1898; May, 1899, and May, 1900, during which time I have

inserted twenty-eight oxyphosphate fillings. Owing to the emotional temperament of the child it has been only through the exercise of the greatest patience and perseverance that I could prepare cavities barely well enough for oxyphosphate fillings, as the slightest pain, or pressure on the outside of a tooth without pain—in fact, even any movement not anticipated or understood by the child, would cause a nervous paroxysm of tears, sobs, though at the same time the child was evidently anxious to have the teeth filled.

As will be noted, I have thus seen the mouth for only a few days at a time, as she is brought to me at Pass Christian (Miss.), from her home in New Orleans, this being her choice, her parents humoring her preferences.

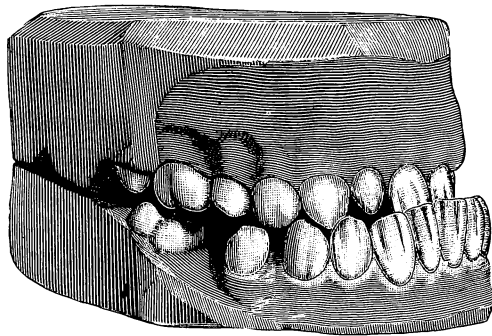


Fig. 2.

In June, 1896, I observed in her a disposition to place her lower jaw forward with the mandible slightly protruded, which, by questioning her, I discovered was due to the fact that the right deciduous cuspids had lost their enamel through caries, and the dentine being sensitive, caused pain whenever the jaw was placed in the normal position, bringing the sensitive cuspids into occlusion, the distal surface of the lower with the mesial surface of the upper. I therefore partially ground them off, cauterized the surfaces with silver nitrate, and instructed her nurse—an old-time “mammy” with full charge of the child, because of the nervous condition of the mother—to see to it that the child should from that time on hold her jaw in the correct position, as she could then so place it when directed to do so, the occlusion not interfering in the least at that time.

So strong was my desire to have a record of the case, in the shape of casts, that—notwithstanding her condition—I succeeded in obtaining models by first letting her chew a piece of beeswax and then letting her

hold it herself and bite into the wax with her front teeth, repeating this a number of times, gradually increasing the size of the wax so as not to alarm the child. In this manner I succeeded in getting the partial bite-impression from which were run the occluding casts illustrated in Fig. 1, taken June 6, 1896.

The instructions given to the good old "mammy" were not carried out, probably on account of the child's nervous condition. For relief of toothache last winter a practitioner in New Orleans (quite unnecessarily as it seems to me) performed the double operation of administering chloroform and extracting the right lower first permanent molar. The second permanent molars and all the bicuspid are in place. The left upper lateral, which had decayed away in the deciduous set, has not erupted in the permanent set, and there is no digital manifestation of its presence in the jaw. In Fig. 1, the right upper deciduous lateral is shown partly decayed away. In Fig. 3 it is seen replaced by a peg-like permanent lateral. These peculiarities of the laterals are further evidence of the neurotic condition.

In May, 1900, I found her health sufficiently improved to enable me to put in seven oxyphosphate fillings in two days, and to get a more extensive bite-impression, from which the occluded casts were run, Fig. 2 showing a well-developed case of prognathism, undoubtedly the result of a vicious habit established accidentally in early childhood.

The condition of the child's nervous system is not yet such as to justify any orthopedic procedures.

The casts are so poor that I must apologize for them, but it is impossible to take regular impressions, owing to the condition of the child.

A Case from Practice.

By DR. GORDON WHITE, Nashville, Tenn.

The case illustrated below is that of a young man twenty-two years of age. Fig. 1 shows clearly the relation of the jaws as they appeared when he presented himself for treatment. There was no contact of the occlusal surfaces of the teeth on the right, anterior to the second molar above and the posterior third of the second molar below. On the left, there was no contact anterior to the third molar below and the posterior third of the second molar above. This condition had existed for a num-

ber of years, at least four, and was apparently growing worse. The prominence of the right lower cuspid and lateral produced quite a deformity of the lip and chin, the face presenting the appearance of the jaw protruding greatly to the right. As is evident from Fig. 1, proper masti-

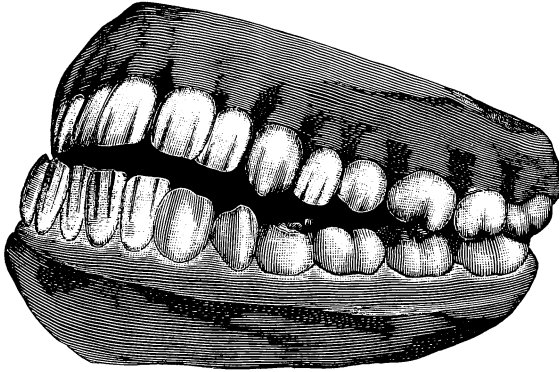


Fig 1.

cation was impossible. To reduce this condition, an ordinary rubber hood plate (Fig. 2), was constructed for the lower teeth, taking in the molars articulating with the upper teeth to afford a masticating surface.

It was necessary to extract the lower second bicuspid and, in order

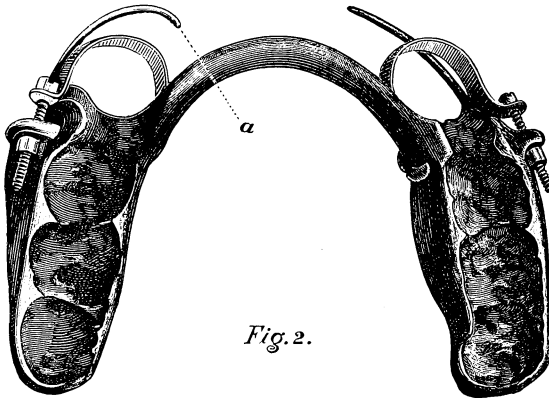


Fig. 2.

that the first bicuspid might be pulled back into their spaces, two spuds were formed on the appliance on either side of the first molars. The inside or lingual spuds were sawed through to admit a ribbon of German silver plate. On the back of each spud, close down to the appliance, was

a groove to admit a little T, left on one end of the ribbon when it was cut. Through each buccal spud was drilled a hole, and a hole having been punched in the other end of the ribbon, a screw was passed through the ribbon and through the spud into a nut on the distal surface of the spud. This screw was a Howe screw post with a head. By passing the ribbon around the first bicuspid and turning the screws from day to day, the first bicuspid soon moved back into the space made by the extraction of the second. As the ribbon became too long, by the moving backward of the bicuspid, it was shortened by taking out and rolling around the T end; and, as the T slipped into a little slot there was no chance for it to unroll, hence one piece of German silver ribbon accomplished the work.

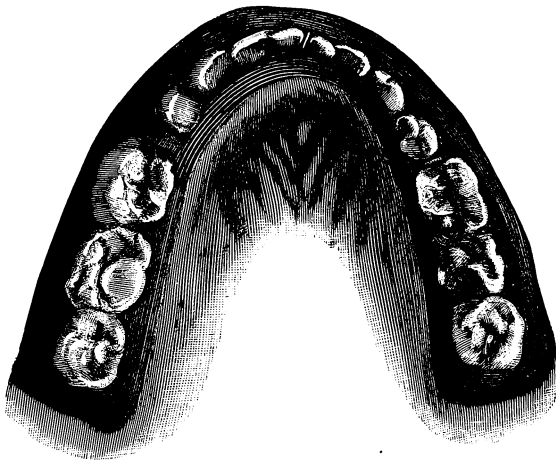


Fig. 3.

On the buccal sides, in this hood plate were vulcanized two steel wire springs (Fig. 2). On the right the purpose was to move inward and backward the cuspid and lateral. On the left, it was only necessary to move inward and backward the cuspid.

A new appliance was now needed to hold the bicuspid in position, and that the springs might be lengthened a little to push back the incisors, except the left incisors which needed little attention. A duplicate of Fig. 2 was constructed, except that the hoods enclosed the bicuspid and the screw and band were only used on the right for the retraction of the cuspid, the spring on the left being sufficient to move and hold the cuspid in position. This appliance acted as a retainer until the expansion of the upper arch, which was quickly accomplished with an ordinary rubber plate and jack-screw.

**Appliance
Swallowed.**

Just here an unexpected accident befel my patient. As the teeth were moved back and in, it was necessary to trim away the bar of hard rubber connecting the two hoods, which, being thus weakened, broke at point A (Fig. 2). The appliance was removed the day before the second appliance was adjusted, and the two hoods were disconnected, but, as they fitted perfectly, they were replaced, although separated. About midnight, while my patient was engaged in a dream fight with burglars, the left hood plate was dislodged and swallowed. Two neighboring physicians were immediately called in, oil was prescribed, and within

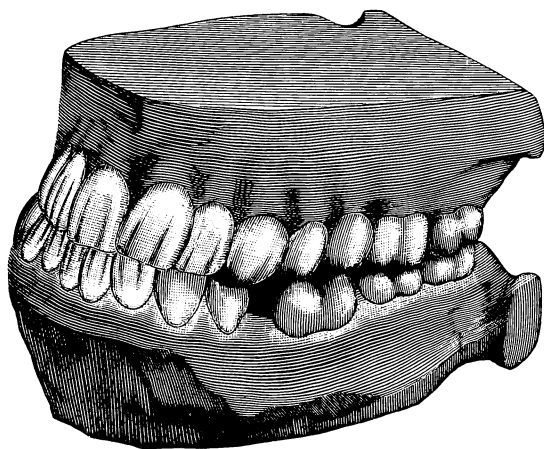


Fig 4.

about thirty hours the appliance was passed, no inconvenience having been suffered except from the consciousness of the movements of the piece in the intestines. Fortunately the ribbon on the left hood broke at the same time as the bar, and so it and the screw were not then attached to the piece swallowed.

When the upper arch had been expanded sufficiently, the upper third molars were extracted, the other molars were ground down, not sufficiently, however, to endanger the pulps and the retaining appliance. Fig. 3 was adjusted, it having been constructed for the lower jaw, of vulcanite with little bars of German silver plate, passing between the teeth to hold the buccal and lingual sides together. This retaining appliance, however, was only used a few days as the occlusion of the jaws brought the upper teeth over the lower sufficiently to retain them in position (Fig. 4). The

upper arch was retained by a thin rubber plate for the roof of the mouth. It will be noticed in Fig. 4 that the lower molars have to some extent moved forward. This moving forward of the posterior teeth is one of the greatest difficulties I have encountered in Orthodontia. The correction was completed some years ago and has been a source of great comfort to my patient as well as satisfaction to myself. The occlusion has constantly improved until now it is all that could be desired.





Oxyphosphate of Zinc.

By SYLVANUS DAVIS, D.D.S.

A Paper Read and Clinic Given Before the Colorado State Dental Association, June 13, 1900.

It is easy to understand why there are so many different opinions about oxyphosphate of zinc; there being so many formulas, each may have its peculiarities, but just why so many report disastrous results, is not so easily explained. Perhaps the veil would be lifted if we could see how the combination between the liquid and powders is made, and what rules are observed in the insertion. These are important points.

In an effort to solve the problem, as to whether or not a phosphate filling acts injuriously upon living pulps, and in order to clear up some of the myths of dentistry, a query was sent out by Dr. Ottolengui to prominent men in the profession, including professors in dental schools. Some twenty odd have replied in the January, February and March numbers of the *ITEMS OF INTEREST*. Taking these replies as a whole, the novice would naturally say, that it is a good thing to avoid. As to the merits or de-merits, they are about equal; the novice is stranded, or like the ship on the ocean without a rudder, drifted here and there by the windy conflicts of opinions. The points against phosphate are what I shall discuss. The majority appeared to believe that the phosphoric acid perhaps was a disturbing agent, and this has led to the practice by many, of interposing a protection between oxyphosphate and dentine.

The scarecrow, arsenious acid, has disturbed many, but that idea is pretty well exploded, and the man who advanced it without positive proof, should be sent to purgatory. It is an impossibility for oxide of zinc to contain arsenious acid after it has been calcined sufficiently for our purpose (unless placed there). Arsenious acid is vaporized at about 400° Fahrenheit, while to properly calcine oxide of zinc it should be kept at a white heat for two hours or more, a heat of about 2200°. I

have put arsenic in the zinc, then calcined, used Marsh test, and not a trace of arsenic could be found. It has been suggested that the heat generated during crystallization is a disturber; this is not likely, as it rises only a few degrees and lasts but a short time. Thermal shock has been mentioned; it is said, that it has been proven to be a conductor of electricity more than half as good as gold; gold at 1,000, oxyphosphate 584. I will admit that it requires some temerity, to take issue on this point, especially, when the exact proportion of conductivity is given; nevertheless, I have given this a thorough test, and it proves to be as poor a conductor as tooth bone, or ivory for all practical purposes.

Many years of experience with oxychloride of zinc and oxyphosphate proves to me that both are perfectly compatible with living tooth structure; both materials have their place. I give the preference to oxychloride for filling pulp chambers and capping pulps. Some of the phosphates contain for the powder, soda, borax, silica, glass, the base being oxide of zinc. Some of these ingredients are worse than useless. The liquid is phosphoric acid in some form. The difference between oxychloride and oxyphosphate is in the liquid. The clinic I give you today will be with phosphate composed of calcined oxide zinc and glacial phosphoric acid. It can be mixed so that it will have different degrees of acidity, or it may be alkaline or neutral. I wish to call your attention to this particular point, that there is no free acid, at any time before crystallization or after (if properly mixed). In practice if you should wish some of the acid set free, it is easily done by leaving the cavity moist; this may be desirable to produce a vascular action. The secretions in some mouths appear to be much more destructive to the material, than in others. I believe it is more in the combination and manipulation, the pressure used making the phosphate more dense, therefore offering the greater resistance to the secretions.

Admitting that a small quantity of phosphoric acid is set free by moisture, pressure, or improper mixing, is it very destructive to pulp and tooth tissue, as several of these writers state? A caustic burns or disorganizes animal substances. Dilute phosphoric acid although evaporated to greater density, is quoted in the U. S. Dispensatory as strongly acid but not corrosive as are other mineral acids. By placing it on my tongue or gums I get nothing more than an acid taste. While oxide of zinc cannot, as stated above, contain arsenic there is another source from which it may enter our oxyphosphate; through impure glacial phosphoric acid.

A practical demonstration is more convincing than theorizing.

**Report
of Clinic.**

1. Showing that it is not a caustic by mixing

thin and spreading on his arm, letting it crystallize, not the slightest impression being made.

2. Showing that by mixing certain proportions of liquid and powder it could be made either acid, alkaline or neutral, but that no free acid is present before or after crystallization; also that the acid could be set free by bringing it in contact with moisture or pressure.

3. Showing that the heat generated by crystallization was but four or five degrees and did not last longer than two or three minutes.

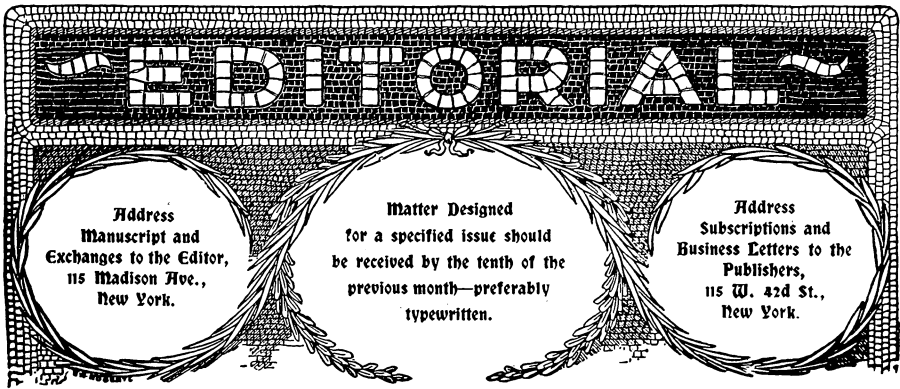
4. Showing that it is as poor a conductor as tooth bone or ivory; as good a non-conductor as is needed for all practical purposes.

5. Showing specimens which had lain for five days in baths of saliva, water, alkali, hydrochloric acid one-fifth, and aniline. The aniline had not penetrated the oxyphosphate, nor had the other baths affected it.

6. Showing that the oxide of zinc cannot contain arsenious acid after being calcined sufficiently for our purposes, that taking about 2200° Fahrenheit while arsenious acid vaporizes at 400°.

The clinic and tests were made with plain calcined oxide of zinc and glacial phosphoric acid. The combining of the powder and liquid and placing in the cavity are the all important points. Line the cavity with phosphate and let it harden so that the pressure of your filling will not set the acid free. Oxyphosphate to resist the secretions should have heavy pressure.





Models in Orthodontia.

A Prize Offered

In September, 1899, we gave the profession a special number, which contained eighty-eight pages of original matter devoted to Prosthodontia. For this issue we had planned to present a similar number exclusively dealing with Orthodontia. Several papers which had been promised were not received, so that our intention has not been fully carried out. However, we place before our readers this month nearly fifty pages on Orthodontia, in which will be found much that is interesting and which contain very important new facts which we shall discuss editorially at some future time.

The preparation of the illustrations for these articles has accentuated a fact noted often before, which is that dentists of high reputation and known skill, even including celebrated specialists in Orthodontia, seem entirely incapable of making perfect models. Undoubtedly, all of these men get models sufficiently accurate to enable them to make fixtures with which to regulate the teeth, but that is because regulating devices are generally but approximate in their adaptation except to the roof of the mouth and palatal surfaces of the teeth, whereas it is the labial buccal, and occlusal surfaces of the teeth which are usually shown in illustrations, together with the gums at the labial and buccal

aspects. In these latter places models presented by dentists are commonly sadly deficient.

The requirements of education in the future will demand more and more that topics must be illustrated whether in the lecture room or in the magazine, and in no direction will this exaction be more rigid than in Orthodontia, any discourse thereon being usually unintelligible without the assistance of pictures. The best aid to the lectures will be the stereopticon lantern, while the magazine should be able to use the half-tone process. Both of these depend on photography, and if photographs are to be the basis the models must be both accurate and artistic. We may erect the dogma that nothing is better than a half-tone from a photograph of a perfect model, and nothing worse than the results of the same process from imperfect models. This point is well shown in this issue wherein we have used a number of half-tones, for whilst some are considerably better than the average, proving that great care was observed in making the models, nevertheless none are absolutely perfect; whereas, some are very bad, the half-tones being utilized to point the moral of this editorial in the hope of initiating a reform. It is only fair to add that in one or two instances we were compelled to use wood engraving because the condition of the models was so wretched as to preclude photographic reproduction.

In this connection the editor takes pleasure in
Prize Offered. offering a gold medal for the best articulated models of a case of irregularity, presented by an undergraduate prior to March 1, 1901. Rules to govern this competition will be published next month.





Hinged Clamps for Partial Lower Pieces.

By DR. RUDOLF WEISSER, Vienna, Austria.

(From *Vierteljahrsschrift für Zahnheilkunde*).

A device which has oft rendered excellent services to me is illustrated in Figs. 1 and 2.



Fig. 1.

In cases where, with the exception of the six front teeth, all other teeth of the lower jaw are missing, and the necks of the former, on account of the alveolar atrophy and recession of the gums, are besides afflicted with a wedge-shaped defect, it is often empirically impossible to construct serviceable ordinary clamps for the fixation of the partial lower piece. The majority of patients will, of course, learn to keep such pieces in their right position, by using their tongues and cheeks, but some do not learn it, and especially those who, on account of a fixed bridge in the upper

jaw, being spoiled in their demands for prosthetic pieces, are educated up to it with difficulty.

The hinged clamp devised by me can, for cosmetic reasons, be employed only in cases where the gums, on account of the retrogressive changes, have receded to a lower line and are no longer visible when

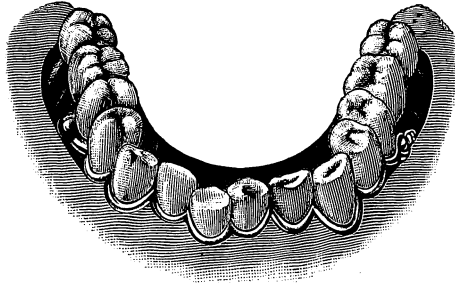


Fig. 2.

speaking or laughing. It consists of wire joints bent to exactly fit the necks of the teeth, and in case of wedge-shaped defects, of stamped metal joints that are covered with solder, and thus strengthened, soldered together. At one end this jointed clamp is to be fastened into the vulcanite body of the piece by means of a hinge; at the other end there is an eye that snaps in a corresponding knot in the vulcanite. (Fig. 1.)

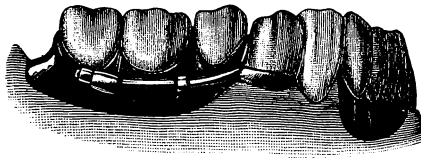


Fig. 3.

This apparatus assures:

1. A thoroughly perfect fixation of the prosthetic piece.
2. It affords, in case of loose incisors, so much firmness that they can often be used even for biting off, and their lives are lengthened.
3. This fixating apparatus causes no pain but wears exceptionally well, and does not ruin the necks of the teeth, on account of its quiet position and exact adaptation.

Another kind of clamp that has proved very serviceable in cases where, for canines or premolars, ordinary clamps were not useful, is illustrated in Fig. 3.

In many cases I have, as illustrated in this figure, provided a cured root with a corresponding full crown; in others I have even devitalized a live irregularly placed canine, with a wedge-shaped defect, then cut down and fitted a porcelain tooth upon the root that, according to the neck of the tooth, forms a notch into which the end of the clamp snaps.





Notes on the Treatment of Irregularities in Position of the Teeth.

By J. F. COLYER, L.R.C.P., M.R.C.S., L.D.S.

Dental Surgeon to the Dental Hospital of London, Dental Surgeon to Charing Cross Hospital and Lecturer on Dental Surgery in the Medical School.

Published by The Dental Mfg. Co., London, England, 1900.

This is a work of about two hundred and fifty pages, printed in clear large type on heavy coated paper, and profusely illustrated. These illustrations at once attract the reader, being unquestionably the best that have come to us from across the water. A number of the cuts are familiar (some too familiar) old friends, and are duly credited to the author's works in which they originally appeared. This borrowing of illustrations, except in rare instances where for criticism or comparison they may be needed, is a reprehensible habit of dental book makers, the less to be excused in the present instance because the half-tone reproductions from photographs of the author's own models, are equal to, if not superior, to the best work of the kind heretofore produced anywhere, and are therefore infinitely more attractive than the borrowed figures, especially the poor ones.

The first chapter deals with causes of irregularities. Touching lightly on congenital, the author turns to a consideration of local causes. In reference to retention of deciduous teeth, he claims that "Deciduous teeth which are pulpless or necrosed undergo but little absorption." If true, this is most important and should lead to prompt removal of such teeth, a practice not observed in this country. But that "necrosed" teeth do not "undergo absorption" sounds a little contradictory.

In the second chapter, devoted to general principles of treatment, some good diagrams are introduced to show the relative force of mastication in moving teeth where such motion has been made possible by extraction; the general deduction, however, that irregular position may be corrected by extraction without resort to pressure mechanically applied would not often be realized.

The third chapter describes divers appliances for mechanically moving teeth. The appliances figured and methods described are almost wholly those of previous writers, which leaves the impression (perhaps erroneous) that this chapter is the result of compilation rather than experience, producing on the mind a corresponding lessening of interest. Though much space is given to spring wire fixtures, the writings of Dr. Jackson seem to have been overlooked, though the various appliances figured are chiefly from Americans. The author seems also to be unfamiliar with the work of Dr. N. W. Kingsley.

The next five chapters describe the use of appliances in practice, and are more interesting than the earlier pages, because many of the author's own cases are recorded and illustrated, his fine results in many cases showing that he is a master in this art, and has the right to speak with authority. Taking up the retraction of upper protrusions, he seems unaware of the fact that it was Kingsley who first used the occiput as a point of resistance, and he appears to be unfamiliar with Jackson's retraction crib, one of the simplest and most useful methods of working within the mouth.

On page 160 he states that, after correction of protrusions of the upper jaw, the retainer should be worn for six months to a year. The practice of the writer, based upon one or two unfortunate experiences, is to use the retainer constantly for six months, and at night only for from two to five years longer. In this connection it is interesting to read the author's record of a case (page 165) where there was a tendency to relapse after eight years.

On page 168 is reached the subject of jumping the bite, which the author tells us "is recommended by some practitioners," here again overlooking Kingsley, who originated the operation. To those familiar with the literature on the subject, and the personnel of various writers, there will be a certain comedy element in the fact that the author quotes Bogue as having performed the Kingsley operation of jumping the bite, especially as the record of the case as given, tells us that Dr. Bogue merely widened the arch, that the lower jaw then voluntarily came forward to its normal position, and that "this result was unexpected."

Almost equally amusing is the long account of a case by Dr. Cutter, of Cambridge, Mass., who finally succeeded in jumping the bite after using several plates. Evidently Dr. Cutter knew as little of Kingsley as does this author, or he would have known that but one plate is needed, to accomplish this much discussed yet simple operation of jumping the bite.

R. O.

Facts, Fads and Fancies About Teeth.

Compiled and Edited by HENRY LOVEJOY AMBLER, M.S., D.D.S., M.D., Dean of Dental Department and Professor of Operative Dentistry and Dental Hygiene, Western Reserve University; Member National Dental Association; Ohio State Dental Society; Northern Ohio Dental Association; Cleveland Dental Society; Author of "Tin Foil and Its Combinations for Filling Teeth."

Illustrations by W. L. EVANS.

The HELMAN-TAYLOR COMPANY, Cleveland, Ohio.

This is a volume of three hundred and ten pages, beautifully bound in cloth and finely printed on good paper. The author has aimed to give his readers, compiled in one volume, all the quips and quibbles, jests and jokes, and brief facts relating to dentistry, which he has been able to find in every odd corner of literature.

These are divided into chapters in accordance with the main topic. The whole makes an exceedingly entertaining volume, not the smallest advantage being that it can be opened at any page and read, as there are very few articles over a page and a half in length, while some are as short as one line.

The author is to be commended for his patience and for the clever manner in which he has put his book together. Compilation is a labor never appreciated by those who have not undertaken it. The following paragraph from the preface is introduced because of the request which it contains:

"Books of 'Quotations' have been found very meager in reference to the teeth; indeed, some of them have not a single reference, and for this reason our readers will appreciate the large amount of labor connected with what we present. The writer will be greatly obliged for any additions or suggestions to this work for use in future editions."

The book would make an addition to any dentist's library, and would be especially appropriate for the waiting room table. It would also be exceedingly useful to gentlemen who expect to make after dinner speeches during the coming winter.

A Pocket Medical Dictionary,

**Giving the Pronunciation and Definition of the Principal Words Used in
Medicine and the Collateral Sciences.**

By GEORGE M. GOULD, A.M., M.D., Author of "The Illustrated Medical Dictionary," "The Student's Medical Dictionary;" Editor of "The Philadelphia Medical Journal," President, 1893-1894, American Academy of Medicine.

Fourth Edition, Revised and Enlarged. 30,000 Words.

P. BLAKISTON'S SON & Co., Philadelphia, 1900.

This book has always been an exceedingly useful volume, because of its compact form and the readiness with which quick reference may be made. In this edition the volume is enlarged by the addition of over five hundred pages, and as the book appeared to be quite complete before, it is very evident that in its present size everything pertaining to medicine has been included.

There is a great deal of literary material in the book, and considering the quantity of matter and the style of binding, the price, one dollar, makes it a most remarkable offer from the publishers. Certainly all writers of dental or medical subjects should have this handy little volume.





Vermont Board of Dental Examiners.

A meeting of the Vermont Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, Wednesday, October 10, 2 o'clock p. m., for the examination of candidates to practice dentistry.

The examinations will be in writing and include Anatomy, Physiology, Histology, Bacteriology, Chemistry, Metallurgy, Pathology, Therapeutics, Surgery, Materia Medica, Anesthesia. Operative and Prosthetic Dentistry, together with an operation in the mouth.

Candidates must come prepared with instruments, rubber dam and gold.

Applications, together with the fee, ten dollars, must be filed with the secretary on or before October 1.

GEO. F. CHENEY, Secretary.

St. Johnsbury, Vt.

New Jersey State Dental Society.

At the thirtieth annual meeting of the New Jersey State Dental Society, held at Asbury Park, N. J., July 18, 19 and 20, the following officers were elected for the ensuing year:

President, F. Edsall Riley, Newark; Vice-President, Wm. L. Fish, Newark; Secretary, Charles A. Meeker, Newark; Treasurer, Henry A. Hull, New Brunswick.

Executive Committee: H. S. Sutphen, Newark; Oscar Adelberg, Elizabeth; F. L. Hindle, New Brunswick; W. H. Pruden, Paterson.

State Dental Commission: J. Allen Osmun, Newark.

CHARLES A. MEEKER, Secretary.

29 Fulton street, Newark, N. J.